



Preparedness on the forward deck of William K. Vanderbilt's motor yacht Tarantula

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March, 1916

**MOTOR
BOATING**

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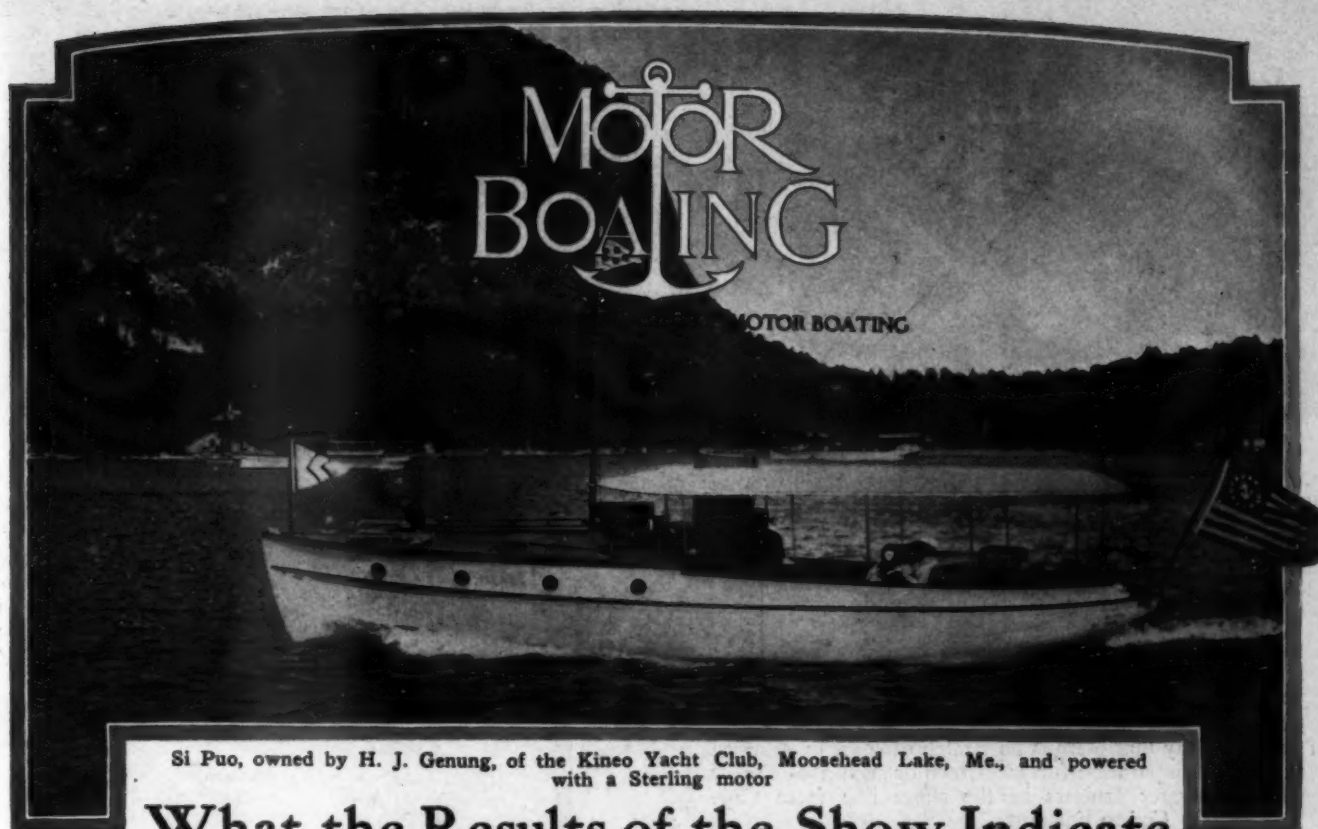
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At Monaco, before the war, the European nations learned to good advantage the many possibilities of the internal combustion motor



Si Puo, owned by H. J. Genung, of the Kineo Yacht Club, Moosehead Lake, Me., and powered with a Sterling motor

What the Results of the Show Indicate

The Entire Industry in a Most Healthy Condition and Prospects Never Brighter — How the Perfection of the Marine Motor Has Helped

NEVER before was the outlook brighter for a successful motor boating season.

A year ago with the unsettled conditions here and elsewhere, chiefly elsewhere, the future was hardly looked forward to with the brightest hopes. But now all that is past. The fog has lifted and the wind shifted to the nor'west with prospects for nothing but the fairest weather and the most favorable winds.

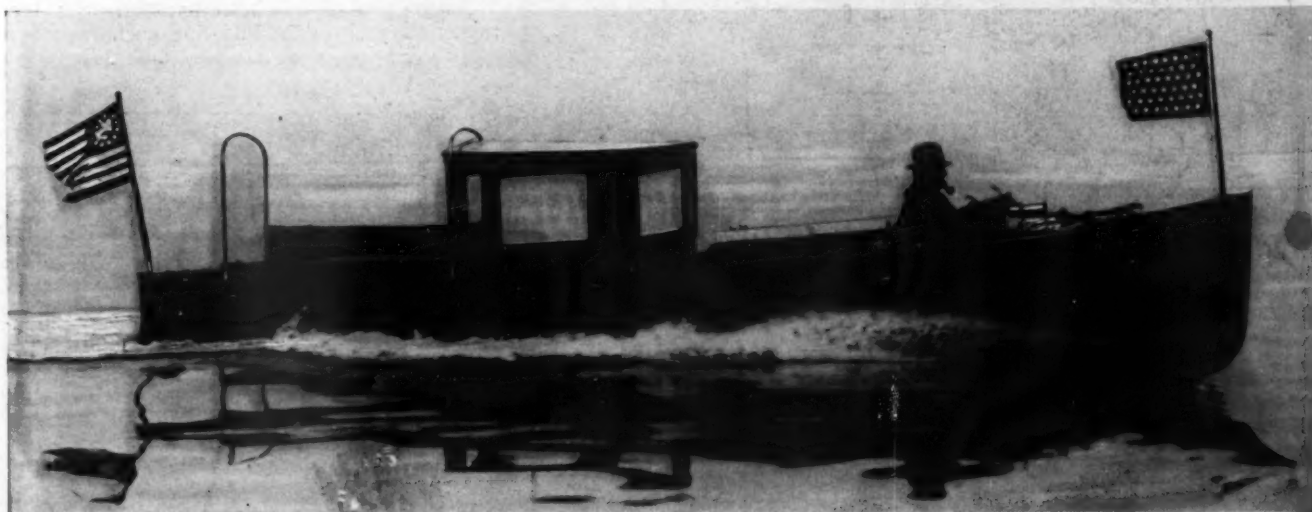
The Motor Boat Show, tried out this year in a new home as an experiment, proved the greatest success. Even the fondest hopes of the most optimistic old salt were not only realized, but in most cases even surpassed. From a business standpoint as well as from the viewpoint of the sporting interests the show brought real results. Those persons who were very much in evidence a few months ago with the slogan—"This will be the last show" have now entirely passed away. The exhibitors who for several years have been skeptical as to whether any tangible results could be shown as the result of the week's time spent at old Madison Square Garden in addition to the several weeks' preparation with its necessary outlay of cold cash went back to their native abodes with pockets

fairly bulging with real orders, but the skepticism left behind.

Grand Central Palace proved superior and more desirable to the old Garden in every way and it appears more than probable that next year's Motor Boat Show will again be housed within the same four walls.

If one should be asked for his opinions as to the most striking feature of the show, he would no doubt reply: "The development in express cruisers." Speeds hardly dreamed of only a year ago, for this type of craft, seem a certainty this coming year. Owners who were satisfied to jog along at 15 miles an hour in a day cruiser or compelled to sail in a light flimsy runabout if they desired greater speed can now have a real and seaworthy cruiser, capable of speeds up above 30 miles per hour and serviceable for extended cruises.

Of course, the development in the fast cruiser is not due to new ideas in hull design and construction alone, but to the advancement and perfection of the marine motor. Twin sixes which will develop three, four or five times as much power as the most powerful automobile motor built make just one of the features which has put the motor boating industry on a footing second to none.



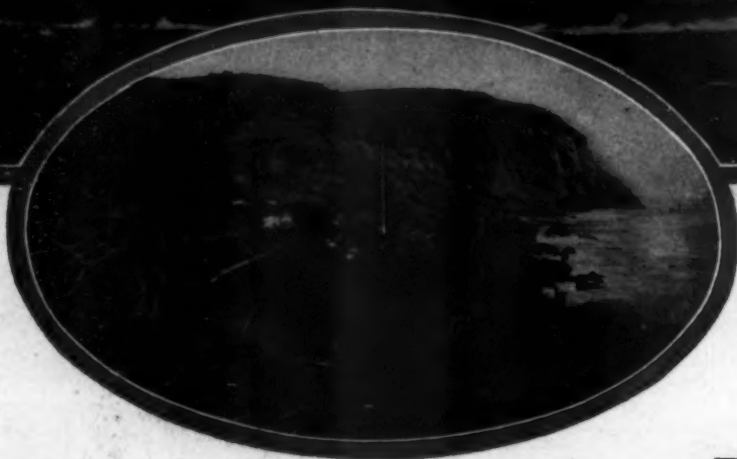
Yacht tender, recently built by the Gas Engine & Power Co., for Payne Whitney, and exhibited at the Motor Boat Show. This boat is 23 feet long by 5 feet 9 inches beam, and carries a small coupé, which is a new feature brought out this year. The craft shows a speed of better than 15 miles an hour with a 22-28 hp. Speedway motor.

Where Shall We Cruise Next Summer?

Number 3.

Maine Coast

Above,
Seguin
Island,
off the
mouth of
the
Kennebec



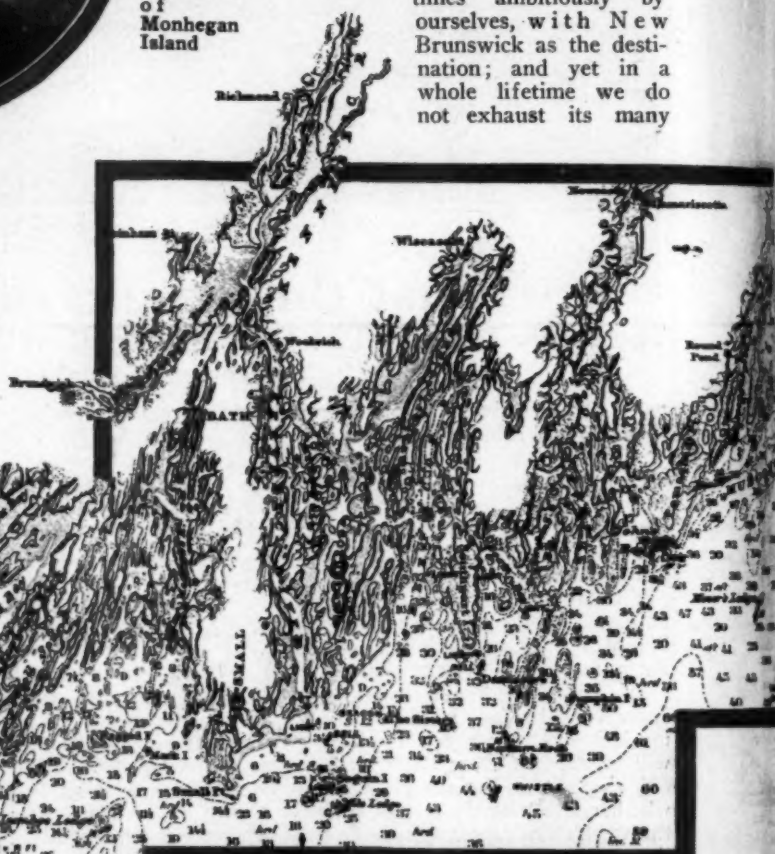
Left, the
rugged
bluffs
of
Monhegan
Island

By Frank P. Huckins

times ambitiously by ourselves, with New Brunswick as the destination; and yet in a whole lifetime we do not exhaust its many

IT is safe to say that there is no stretch of coast in America that is such a paradise for yachtsmen or such a Mecca of real deep-water cruisers as the shore line from Cape Cod to Eastport.

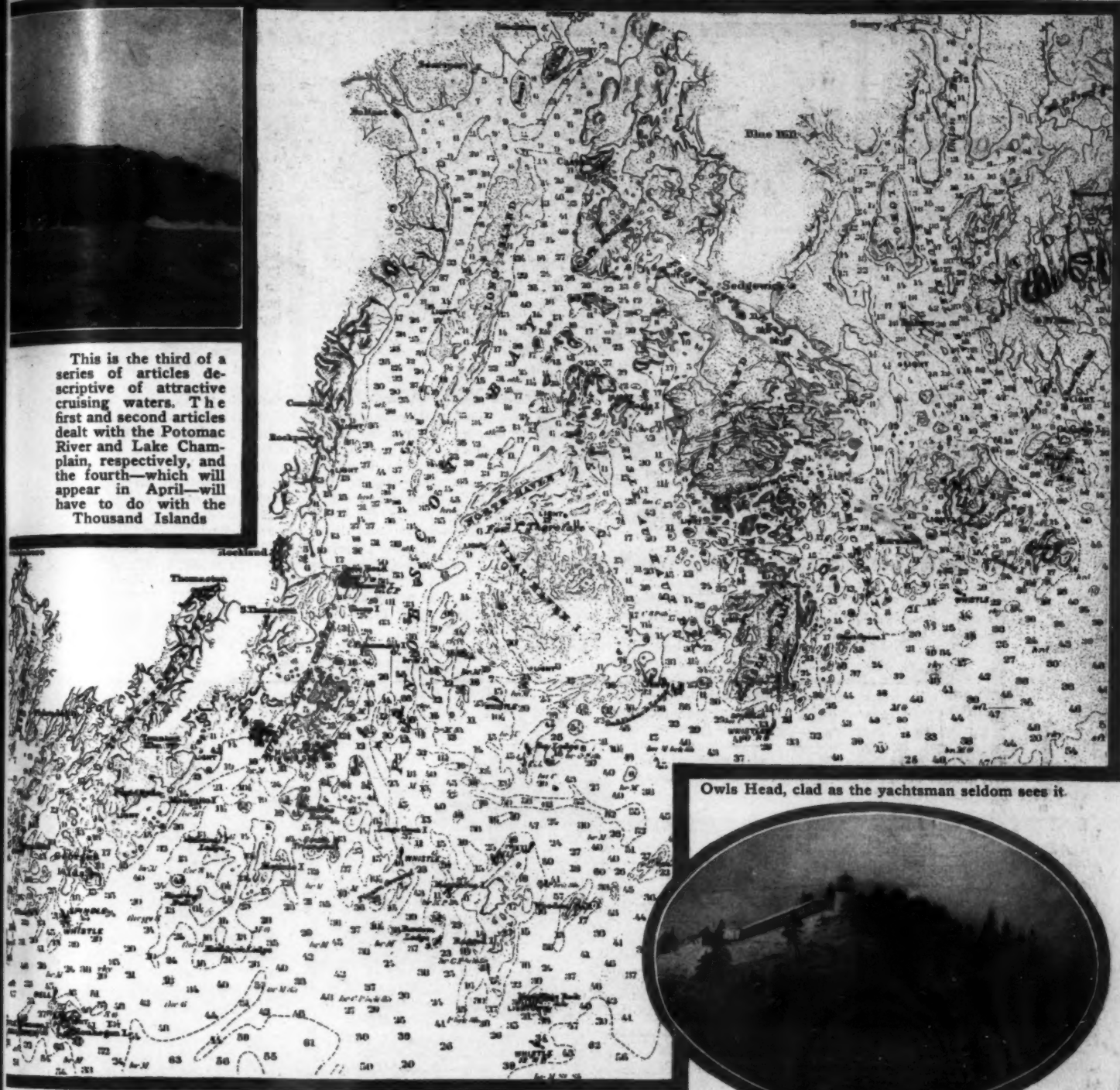
We spend the winter evenings dreaming and poring over the charts of the Maine coast, and summer after summer "hike" out of Boston harbor for a vacation along its shores, sometimes on the famous Boston Yacht Club cruise, some-



harbors, rivers and lovely out-of-the-way nooks. Boston and Marblehead harbors, with their numerous yacht clubs and fine anchorages, are



This is the third of a series of articles descriptive of attractive cruising waters. The first and second articles dealt with the Potomac River and Lake Champlain, respectively, and the fourth—which will appear in April—will have to do with the Thousand Islands.



Owls Head, clad as the yachtsman seldom sees it.



too well known to require description. Our first stopping place may thus be Gloucester, a large, well-protected harbor, with its historic fishing industry—always evident to the eye and

to the nose. There are several large marine railways here and supplies of all kinds may be obtained. Anchorage is good






*Quoddy Head to Cape Cod—
Scale: 6.3 miles to the inch*



Northeast Harbor, Mt. Desert, Me.—Any sound

25-footer may cruise from New York to the east—
one of the most fascinating

the east-
ernmost



ernmost point of the United States, via the Cape Cod Canal, with perfect safety. Its many islands and secluded harbors make the coast of Maine
cruising grounds in the world.

The Maine Coast

The allurements which the broken coastlines of Maine may hold for the exploring motor boatman is indicated by the charts shown here and on pages 8 and 9



anywhere in the inner harbor, and there are several public wharves.

From Gloucester the Squam canal and river, with six feet of water at low tide, which runs off Cape Ann, passes under a highway bridge and a railway bridge, manned respectively by efficient and reluctant draw-tend-

yachts. Thence the course lies out to sea, with an option of the bleak Isles of Shoals, having a fair anchorage, if the wind does not shift in the night; or a safer refuge in Little Harbor or Kittery Harbor, below Portsmouth, N. H. Although the Portsmouth Yacht Club, on the Piscataqua, is ever cordial to visiting yachtsmen, the swift tides of the river almost nullify

ers, and ends at Annisquam, where there is a yacht club and a fine little harbor for small

distance of just fifty nautical miles. However, lying along the shore are York Harbor, well protected and only a short distance by trolley to York Beach, with its summer amusements, but with a current so strong that a heavy anchor and lots of scope are in order; Cape Porpoise, a good refuge in a storm and little more; Kennebunkport, inaccessible at low tide, but fashionable; Biddeford Pool, famous for its mosquitoes, and the Saco River, which, though not very deep, is pretty and quiet.

Off the Portland Yacht Club there is good

(Continued on page 62)



An attractive reach in Northeast Harbor, Mt. Desert (oval), and a general view of Carver Harbor, Vinal Haven, Me., with motor craft and sailboats dotting the waters of the Bay

PROGRESS IN MARINE MOTOR DESIGN

Novel and Practical Features Found on No Other Type of Engines—The Great Advancement Made in Marine Power Plants Within a Year

By W. G. Randolph

THE recent motor boat show at the Palace brought to light many new and interesting features in marine motor design. The pronounced progress of the last few months, however, did not come unheralded or unexpected by those who follow the advance of the marine engine industry. What was revealed at the show amply satisfied their hopes and proved that marine engineers were not behind their land competitors.

A little more than a year ago a prominent motor car manufacturer introduced its eight-cylinder V motor, and at the automobile show several cars were equipped with similar motors. This year marked the first appearance of the "twin-six" V-type twelve. Not to be outdone, at our own motor boat show we found an eight-cylinder V-type, obviously an automobile development, and a twelve of approximately 400 h.p. to which we can point with pride as one of the high water marks of engine development. This motor is more powerful than six or seven automobile twelves put together. Like most of the large engines of today this V-type is provided with twin inlet and exhaust valves, four in all to a cylinder. Constructed with removable cylinder heads, the valves are set directly in the head and are actuated by overhead camshafts, one for each arm of the V. We are not interested in what a certain construction is but in what it accomplishes, so in this new twelve we look for the power that the overhead valves give and in connection with an overhead camshaft and V motor accessibility that other types of valve motion would lack. It is too frequently complained of in automobile circles that V motors are inaccessible. That may be so when the valve mechanism is down in the alley between the rows of cylinders and is covered by magneto, carbureter, starter, etc., but in this motor, although the carbureter and starter are there, nothing is concealed under them.

Never before have motors been shown which were so completely enclosed. Last year there were indications that progress was coming in this direction, but this year some of the motors do not show a moving part from flywheel housing to reverse gear.

One only needs to study the designs to see how practical these improvements are. Many a man after a rainstorm has found the water up to the flywheel of his motor, thus making it impossible to start the engine and pump the boat out

by its power. You may imagine how after a siege with a pump he will wax enthusiastic over an engine with an enclosed flywheel which would allow him to start the machine and let it do the work. Then the man who had his magneto drowned out last season is all praise for the machine with the magneto placed over the reverse gear under a neatly moulded cover. The valve springs behind easily removable covers have a three-fold advantage. They keep the noise and oil in, and assist lubrication. It is only when overhauling time comes that the third is appreciated. Exposed valve stems are liable to rust and when they do they are hard to remove. Some of the motors at the show go still further and enclose the entire cylinder head, spark plugs and all with some form of removable covering. This is ideal, for in combination with an enclosed magneto there is no exposed wiring and the entire ignition system is spray-proof. With the enclosing of motors more attention is paid to oil and grease-tightness. Gears are enclosed and with this enclosure has disappeared the need of grease cups. The motor buyer of 1916 will look for the features that keep oil inside the motor where it can do its work.

Two or three manufacturers of two-cycle engines have brought out en bloc motors that vie with their four-cycle rivals in compactness of design and absence of trappy parts. One new-comer at the show presents a unique two-cycle design that makes use of two pistons for precompressing the gas before admitting it to the cylinder. Like most motors of this type it is heavy and necessarily bulky. Two-cycle manufacturers have realized the advisability of using a magneto and most of the two-cycle detachables are so equipped,

are are many of the standard designs.

Owing to the newness of electric equipment in the field the motors of two years ago were noted for the careless way with which the self-starters were mounted, there being, apparently, no attempt at accessibility, silence, or durability. The motors of 1916 have the starter built into them as a component part of their design with surprising results in efficiency. Starters for marine motors are more expensive than for cars. This is natural, as the motor boatman demands and receives more in the way of battery capacity, while in most cases he has a larger motor to crank.

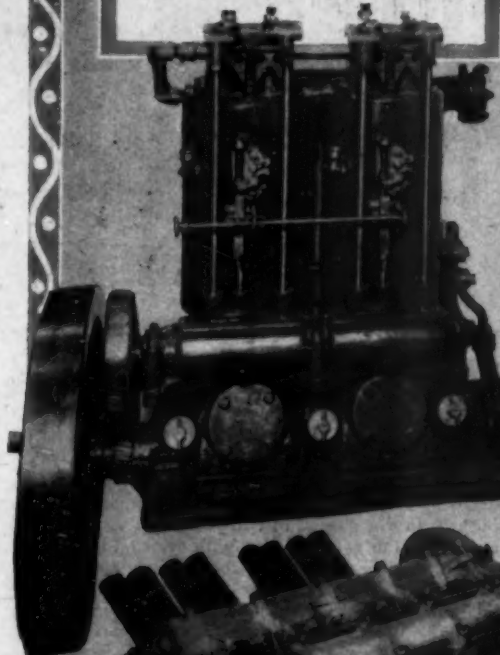
The increasing tendency toward removable cylinder heads and the elimination of valve caps is becoming more and more noticeable. Removable heads have always been well thought of because with them it is possible to remove a piston without tearing down the motor. The past year has shown them to have many other advantages. If the motor is a T- or an L-head four-cycle it is possible to eliminate valve caps and set the plugs directly in the removable head. At the same time it is only necessary to unscrew perhaps eight nuts to remove the cylinder head and get at the valves for regrinding or the cylinders for carbon removal. In a valve-in-the-head motor with a removable cylinder head, the valves can be of increased diameter and placed directly in the head without cages, thus being kept cooler and remaining tight for a longer period of time without regrinding. Removable cylinder heads also make a motor a better manufacturing proposition, as the foundry work is less complicated and in small and medium-sized motors the top of the crankcase can be incorporated in one casting with the cylinder block. A little feature that goes hand in hand with the elimination of valve caps is the placing of spark plugs directly in the cylinder heads where they will be surrounded by the water jacket and thus cooled. Any one who has operated an extreme high-speed engine wherein hot plugs caused the motor to preignite will appreciate this change.

Rotative speeds have

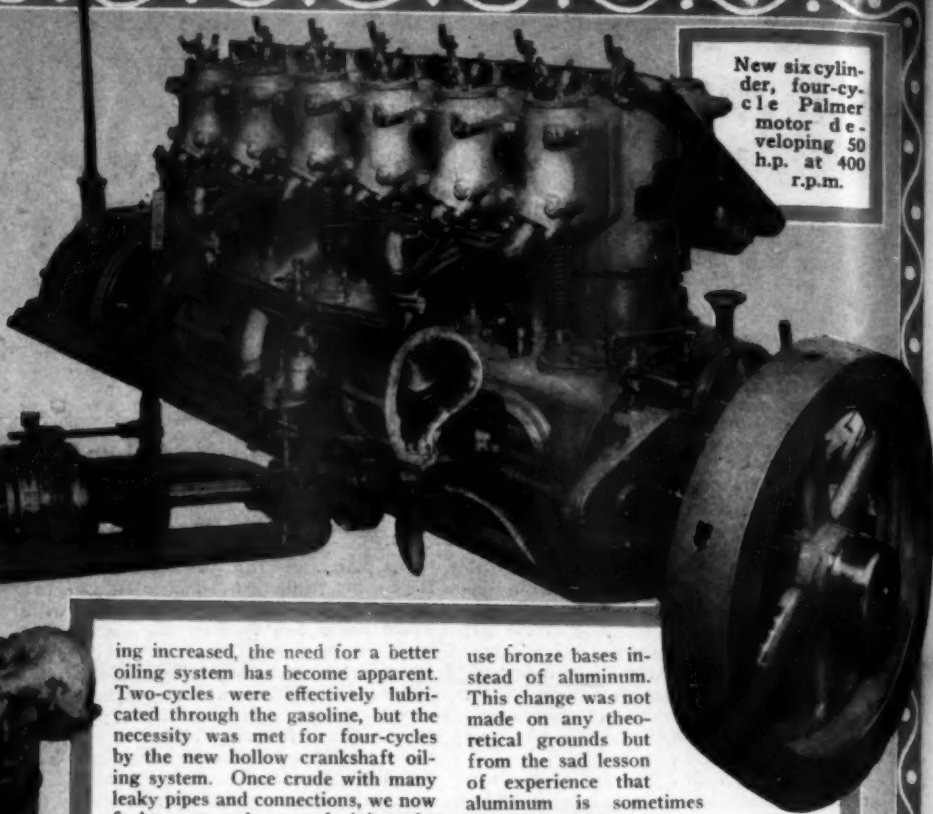
A San Francisco Standard, similar to the motors with which thousands of the heavy boats of the Pacific are powered and which stand up against the hardest kind of service



A new unit power plant, four-cycle
Mianus motor with overhead valves



New six cylinder,
four-cycle Palmer
motor de-
veloping 50
h.p. at 400
r.p.m.



A four-cylinder
Wisconsin racing
motor which de-
velops 130 h.p.
and weighs only
600 pounds

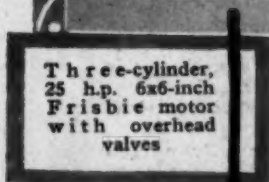
ing increased, the need for a better oiling system has become apparent. Two-cycles were effectively lubricated through the gasoline, but the necessity was met for four-cycles by the new hollow crankshaft oiling system. Once crude with many leaky pipes and connections, we now find an utter absence of piping, the oil being delivered to the bearings through holes in the castings. Forced there under pressure it lubricates when the splash system would give indifferent results and has contributed greatly to the reliability of modern high-speed engines. It has its advantages for the lower powers as is shown by its adoption by one or two manufacturers who previously used other methods of oiling.

Materials are receiving more attention than usual, and strange to say there is a pronounced tendency in the high-powered machines to

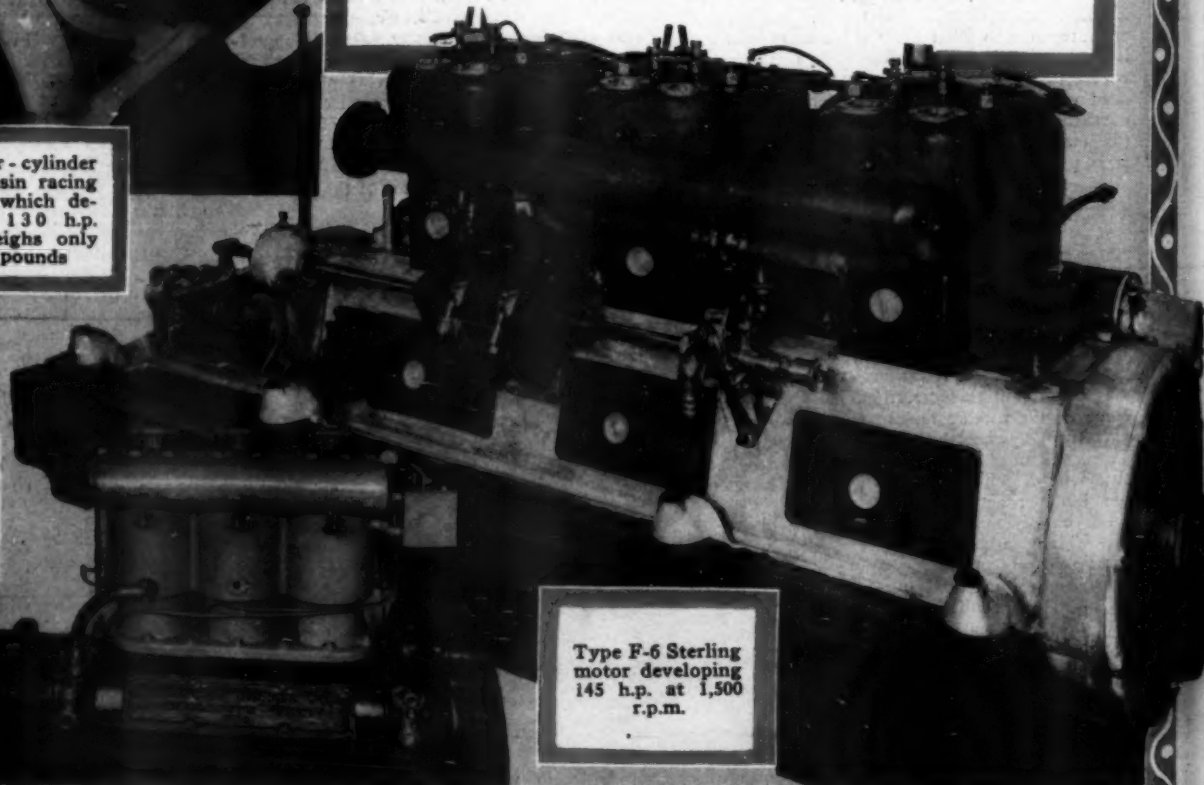
use bronze bases instead of aluminum. This change was not made on any theoretical grounds but from the sad lesson of experience that aluminum is sometimes not strong enough for the long cases of high-power eights.

More power is obtained from the same cylinder size than ever before. This is due partly to higher r.p.m. but also to better carbureters, ignition systems and general design. The lightening of reciprocating parts is another factor in this, but our marine designers have not carried this development far enough. Aluminum pistons, so prominent in automobile practice, have not gained much headway for marine use and at present only one or two concerns use them.

Three-cylinder,
25 h.p. 6x6-inch
Frisbie motor
with overhead
valves



Type F-6 Sterling
motor developing
145 h.p. at 1,500
r.p.m.

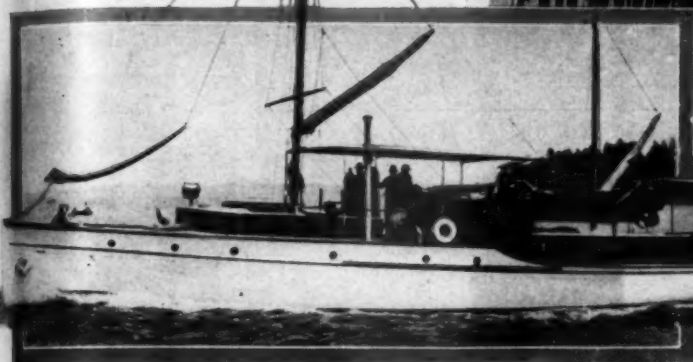


MOTOR YACHTS

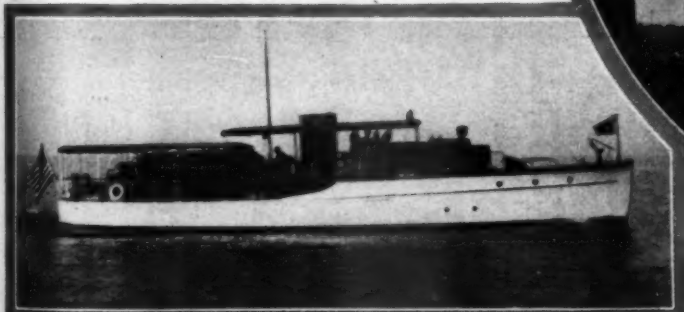
for FLORIDA

Santa Maria, a 64-footer by F. S. Nock and Dr. W. S. Dennett. good type for cruising as essentially worthy

designed owned by She is a South-she is sea-



The popularity of Florida as winter cruising grounds has had a wholesome effect on motor boat design, for boating in the latitude of 25N introduces several factors not met with in the North. Of these the combination of shallow draft with seaworthiness is perhaps the most important, but the subject of ventilation is also vital. Paradoxically enough adequate heating arrangements are necessary, while ample deck space and roomy quarters below are desiderata. How well these various requirements are being worked out nowadays is apparent from a study of the plans and photographs of the boats for Florida service shown in the following pages.



Zambrota is a 70-footer built last year for use on the west coast of Florida. She is of the tunnel-stern type, and of heavy construction



Twenty-five years ago the charms of lower Florida were practically unknown but now they are discovered annually by hundreds of yachtsmen. The gentle climate of the Peninsular State and its countless waterways exert an appeal which is hard indeed to resist

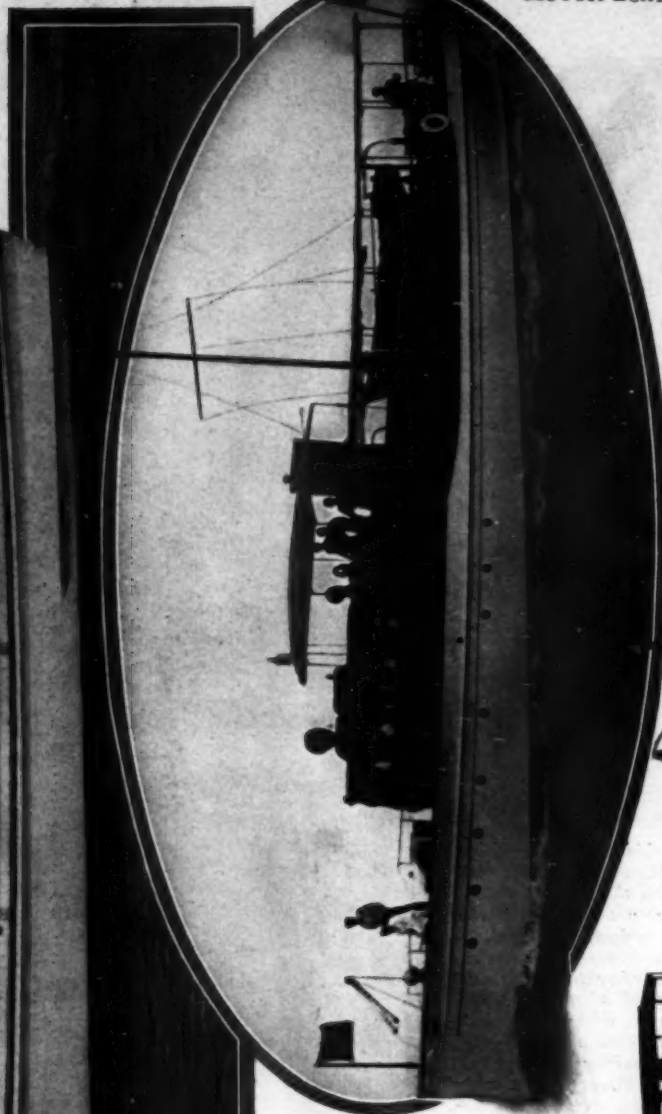
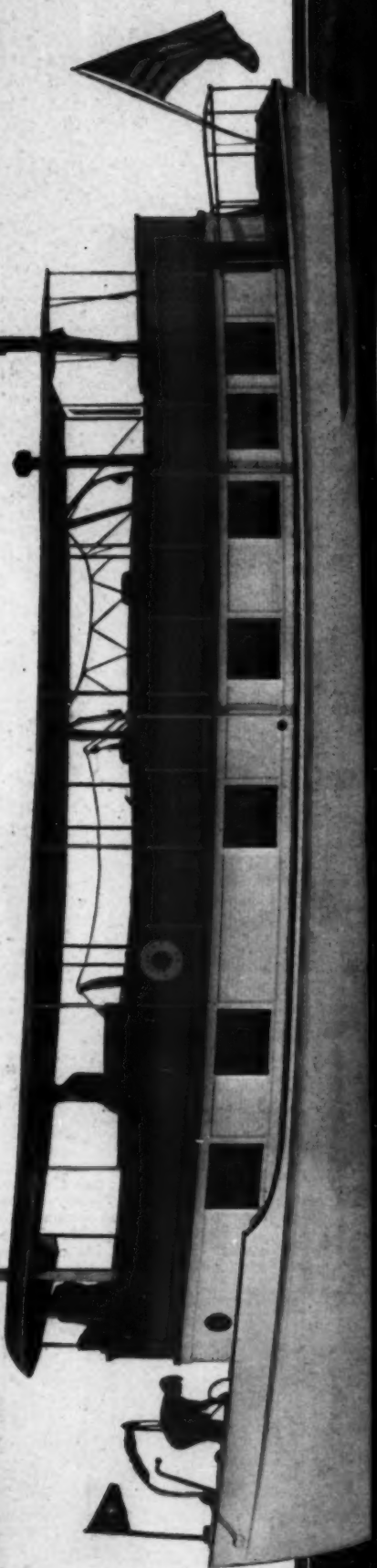


Margo II is a 40-foot semi-houseboat cruiser having exceptional living accommodations. She is owned by Frederic D. Nathans and is distinctive among the smaller Florida motor yachts

MOTOR HOUSE YACHTS

for FLORIDA

14




The upper illustration shows a very successful motor houseboat, which was built by Henry Nevins for winter cruising down the East Coast. Although the designers, Swasey, Raymond & Page, kept away from the conventional laying down the lines of Dreamer, an unusual amount obtained between decks, while light and ventilation large square windows. Dreamer is 60 feet long, but nel stern the draft has been restricted to 3 feet. tures mark this boat, which is owned by Charles W. and the equipment includes a piano and an open saloon. A 40 h.p. Sterling engine is installed.

In the bottom photograph is seen Nahmeoka, a 95-foot houseboat, built by the Mathis Yacht Building Co., of Camden, N. J., New York City. This yacht is a cruiser in lines and houseboat of the most comfortable sort in interior layout plan is typical of the Mathis type of construction. The quarters are all aft, separated from the engine-bulkhead. Two 100 h.p. Craig engines give a speed

of 14 1/2 miles per hour, and yet a room by a steel arrangement. Her tion, and the own- room by a steel



Here is an 82-foot Florida house yacht, which was one of the pioneers in tunnel stern construction, and which at the time of her initial plunge was declared to be impractical. However, since her launching she has proved that seaworthiness and a draft of 27 inches are not incompatible. Wethea was built by the Matthews Boat Co., for John Ringling, of New York, and is powered with two 75 h.p. Sterlings

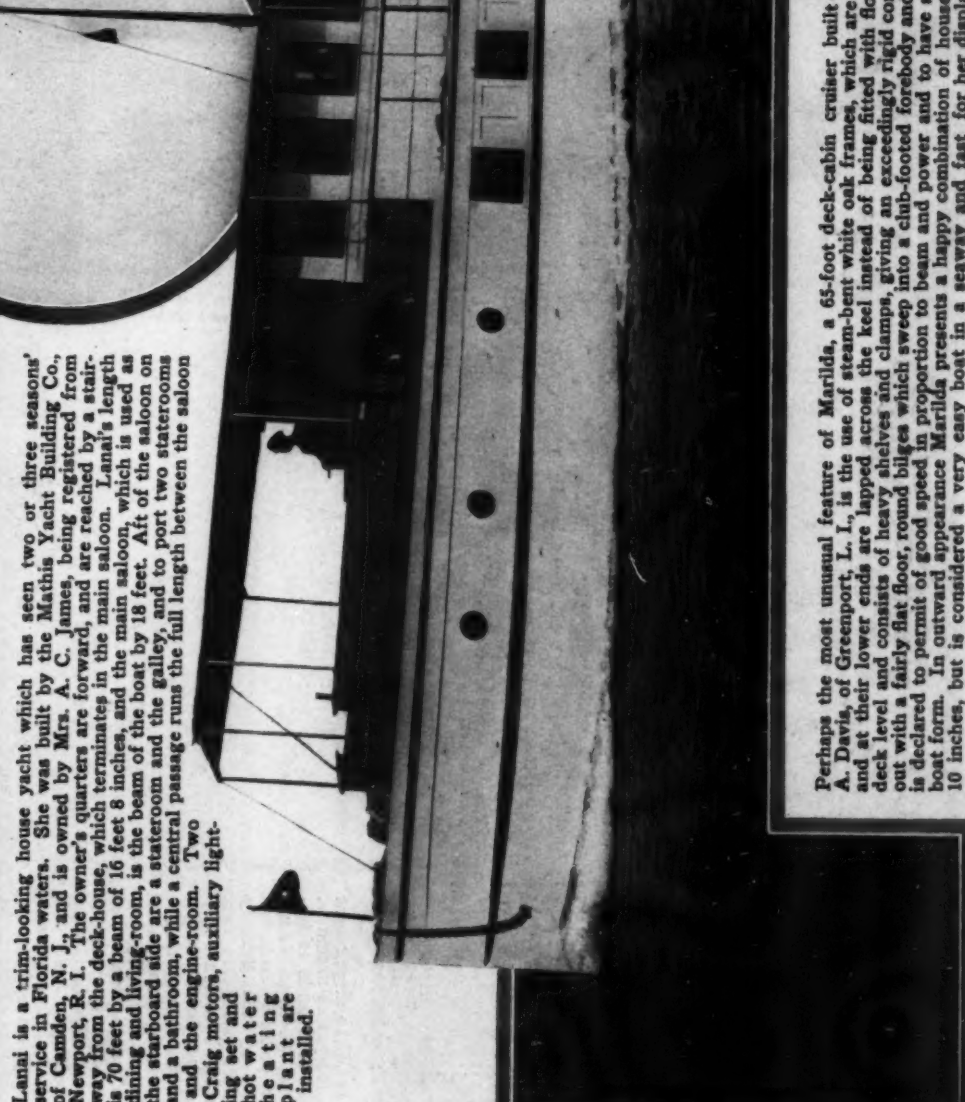


Lanai is a trim-looking house yacht which has seen two or three seasons' service in Florida waters. She was built by the Mathis Yacht Building Co., of Camden, N. J., and is owned by Mrs. A. C. James, being registered from Newport, R. I. The owner's quarters are forward, and are reached by a stairway from the deck-house, which terminates in the main saloon. Lanai's length is 70 feet by a beam of 16 feet 8 inches, and the main saloon, which is used as dining and living-room, is the beam of the boat by 18 feet. Aft of the saloon on the starboard side are a stateroom and the galley, and to port two staterooms and a bathroom, while a central passage runs the full length between the saloon and the engine-room. Two

Craig motors, auxiliary lighting set and hot water heating plant are installed.



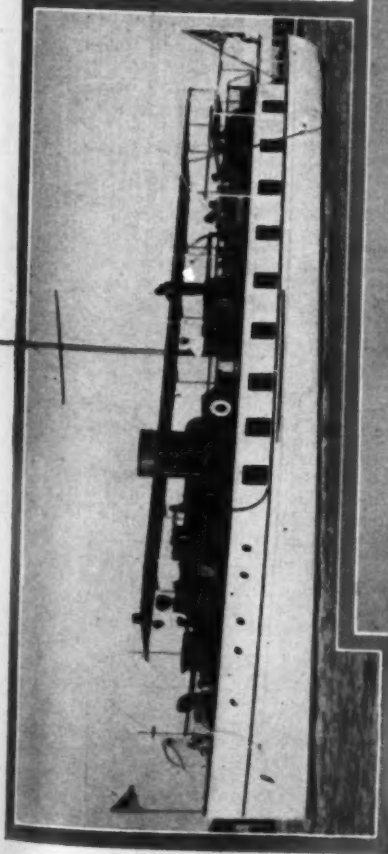
A house yacht of particularly seaworthy type is Santanta, a 90 x 18 1/2-foot Lawley creation, designed by Cox & Stevens, and owned by Osborne Howes. She is of good speed with an extremely shippy appearance, and her hull is partitioned off by four heavy steel bulkheads. The accommodations for the owner and his guests are aft, occupying considerably more than half the length of the vessel. Directly aft of the engine-room and at the greatest width of the hull is the main saloon, which communicates by an easy stairway with the upper deck. This room is used as the dining saloon, although the deck-house forward is suitable for a breakfast room, as it is directly above the galley, and connected by dumbwaiter. Aft of the saloon is a central passage on either side of which are arranged the bath-rooms and the guests' staterooms. This passage ends in the owner's double stateroom aft, which occupies the full width of the boat, and is also accessible by a companionway from the after deck.



Perhaps the most unusual feature of Marilda, a 65-foot deck-cabin cruiser built by the Greenport Basin & Construction Co. for Frank A. Davis, of Greenport, L. I., is the use of steam-bent white oak frames, which are carried between the windows up to the main deck level, and at their lower ends are lapped across the keel instead of being fitted with floors. The upper strength member is carried at the main deck level and consists of heavy shelves and clamps, giving an exceedingly rigid construction. The underbody design of Marilda was worked out with a fairly flat floor, round bilges which sweep into a club-footed forebody and with easy lines up to the transom. This underbody form is declared to permit of good speed in proportion to beam and power and to have several advantages over the square bilge or usual houseboat form. In outward appearance Marilda presents a happy combination of houseboat and cruiser lines. She has a draft of only 2 feet 10 inches, but is considered a very easy boat in a seaway and fast for her displacement. She is powered with two four-cylinder Sterling motors and has an auxiliary lighting set as well.

Two bath-rooms. She has two Win-ton motors

The illustration below shows a Matthews boat of the day cruiser type, used on the western coast of Florida. She is of a design which is particularly suited to this type of service, as she possesses ample seaworthiness for running out of the passes into the Gulf, while her speed will permit her to make a long coastwise run between dawn and darkness



The upper picture shows Zianetta, a handsome motor house yacht, owned by Charles Van Bergen, of New York, and built for him by the Mathis Yacht Building Co. of Camden, N. J. This vessel, which is a particularly pleasing specimen of her type, has been widely and favorably known along the east coast of Florida for several years. She is 89 feet and 7 inches in overall length, and has a beam of 16 feet 10 inches, with a draft of 39 inches. Her two Craig engines give her a maximum speed of 11 miles per hour, and she is declared to be an unusually good sea boat

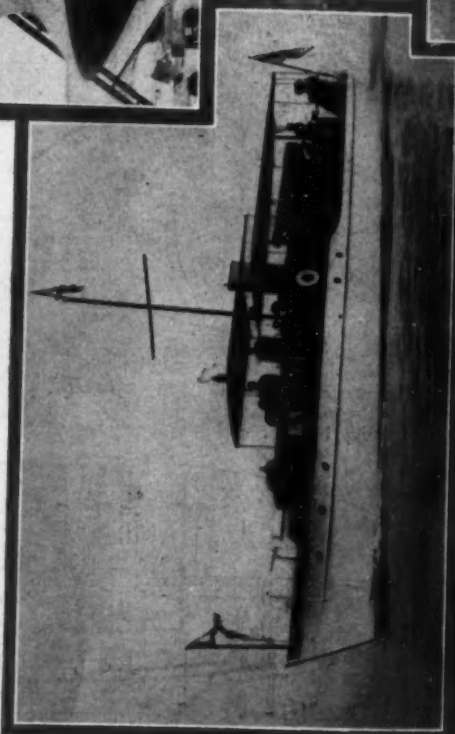


Wayfarer, shown above, is another Florida type from the yards of the Matthews Boat Co. She is owned by Robert Henkel, of Detroit, Mich., and is 51 feet in length by 12 feet beam. Owing to the use of a tunnel stern her draft has been kept down to 28 inches. Wayfarer is strictly of the one-man type, and is controlled entirely from the steering wheel location. A 30 h.p. four-cylinder Murray & Tregurtha motor is installed, together with a 1 k.w. Fay & Bowen lighting set

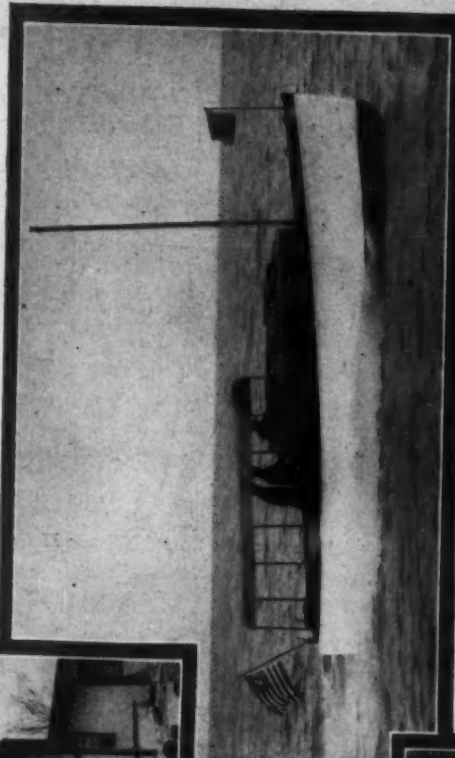


A near view of Wether's stern, showing the design of the tunnel in which the two propellers revolve

Alela, another Mathis houseboat. She is powered with two Standard motors and measures 70 feet by 16 feet 8 inches



Ocoee, a 63 x 13-foot motor cruiser, built by the Matthews Boat Co., of Port Clinton, O. She has two double staterooms, bath, dining saloon and single stateroom with adjoining toilet. Two 25 h.p. Standard motors give a speed of 12 miles

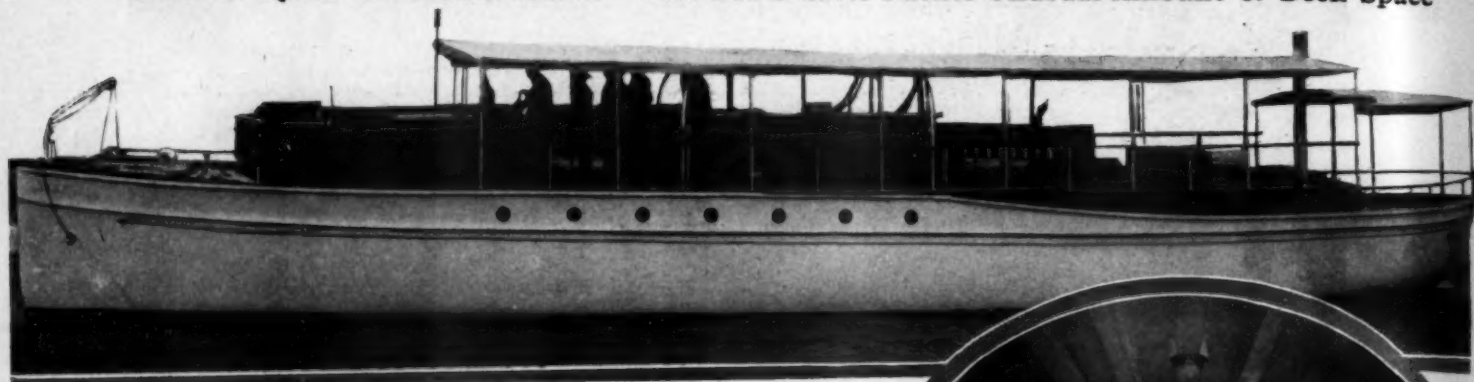


Romar, an attractive day cruising and fishing boat, designed and constructed by the Matthews Boat Co., for C. E. Ringling, for use on the west coast of Florida. She is 34 feet in length, and her 100 h.p. Van Blerck drives her at a 12-mile rate



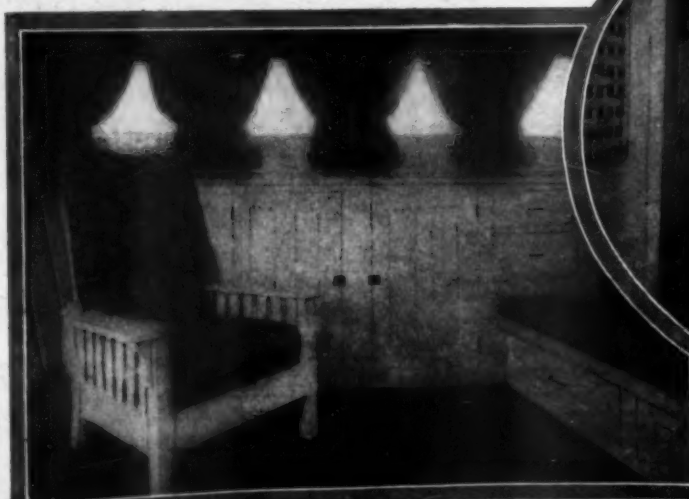
The Newest Florida Yacht

Wissoe II, Which Left New York for the South Late in January, Combines Shallow Draft with Excellent Speed and Seaworthiness—Wide Beam Gives Rather Unusual Amount of Deck Space



In her trial runs on the Sound Wissoe II averaged 14½ m.p.h.

ONE of the midwinter arrivals at Florida ports was Wissoe II, an 83½ x 16½-foot motor yacht, owned by George L. Carnegie, which sailed from New York on January 23 to run outside as far as Norfolk. Wissoe II is an exceptionally attractive example of a type of motor boat which the



The owner's quarters forward are tastefully paneled and finished in white enamel



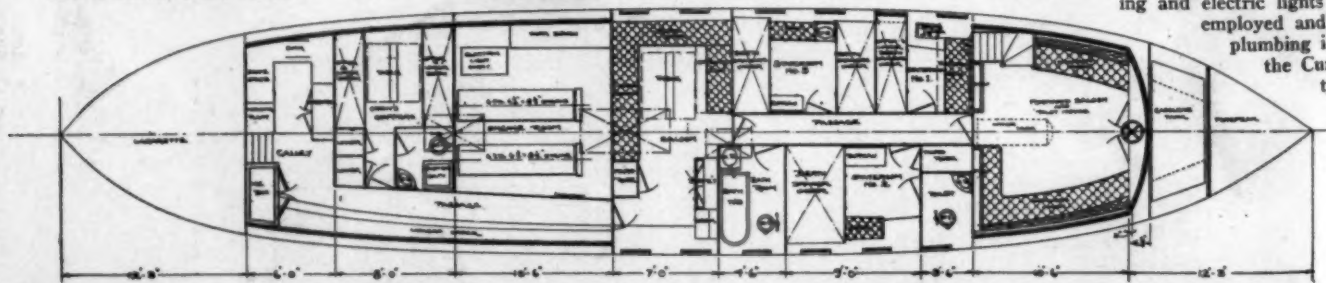
New York Yacht, Launch & Engine Co., of Morris Heights, N. Y., has been working out, Marold and Maris being her predecessors. She is heavily built of oak

Although usually swung out, the tenders were housed on deck for the out-

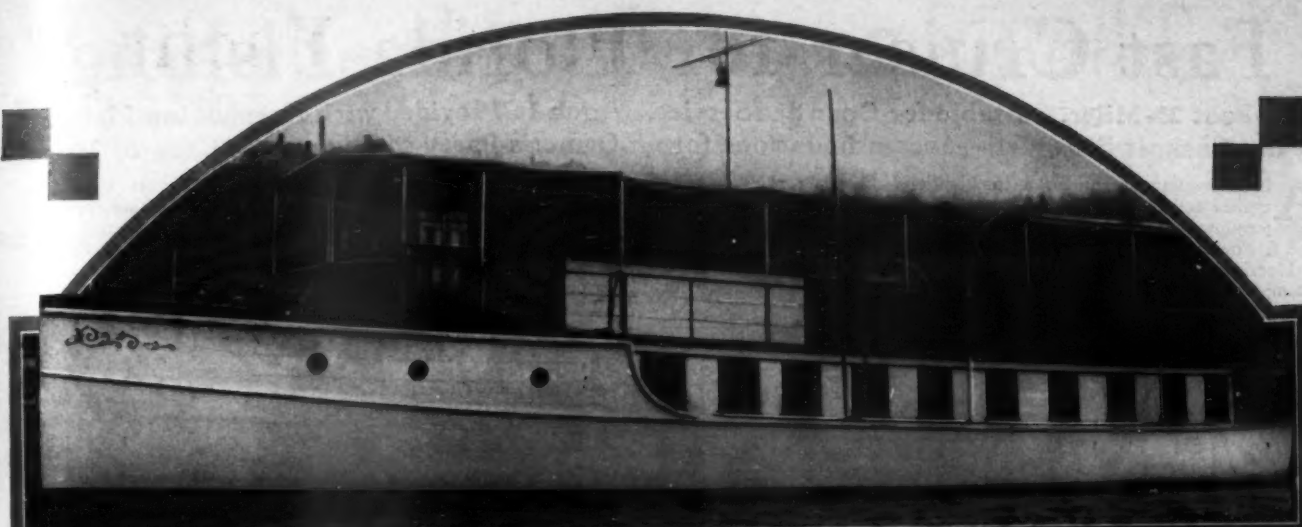
and yellow pine, and her outside cabinet work is in mahogany with the

owner's quarters finished in white enamel.

Two six-cylinder 6½ x 8½-inch 20th Century motors totalling 150 h.p. give Wissoe II a speed of 14½ miles per hour. Hot water heating and electric lights are employed and the plumbing is of the Curtiss type.



Arrangement plan of Wissoe II, showing how the engine-room and crew's quarters are placed aft of amidships with the owner's compartments forward. In spite of this arrangement the saloon is easily reached from the galley



This roomy floating home is powered with two four-cylinder 20th Century motors

Tanguingui

A 63-Foot Motor Houseboat for All-Year Use, Now in Service in Florida

THE illustrations shown herewith are of the 63 x 16-foot houseboat Tanguingui, designed and built by the New York Yacht, Launch & Engine Co., of Morris Heights, New York City, and recently delivered to J. C. McCoy, of Nantuxatt Point, R. I.

Tanguingui is fitted with two four-cylinder 40-50 h.p. 20th Century motors, and she was built and equipped for all-year-round service—in Florida in winter and in the north in the summer.

Tanguingui is of the regulation houseboat type and is laid out with large double stateroom forward with two single staterooms on each side of a passage leading from the forward stateroom to the saloon below decks. The motor room and crew's quarters are aft, as is the galley. The deck-house, which is 12 feet square, has stairs leading to the saloon.

The boat is fully equipped, has hot water heating throughout, and a direct-connected generating set with complete electric light plant.

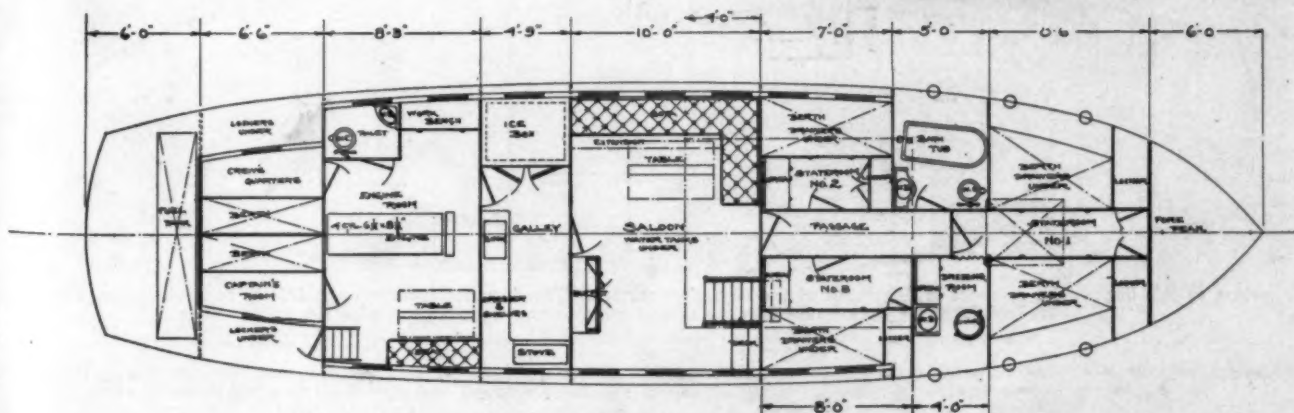
The hull is of yellow pine with oak framing and the interior is finished in white enamel with mahogany trim.

A corner of the dining saloon

Tanguingui left for Florida in December, and the owner is now in the middle of a delightful winter season cruising in Southern waters.

A study of the plan and photographs will give an idea of the interior design of this boat.

The galley is fully equipped



Arrangement plan of Tanguingui

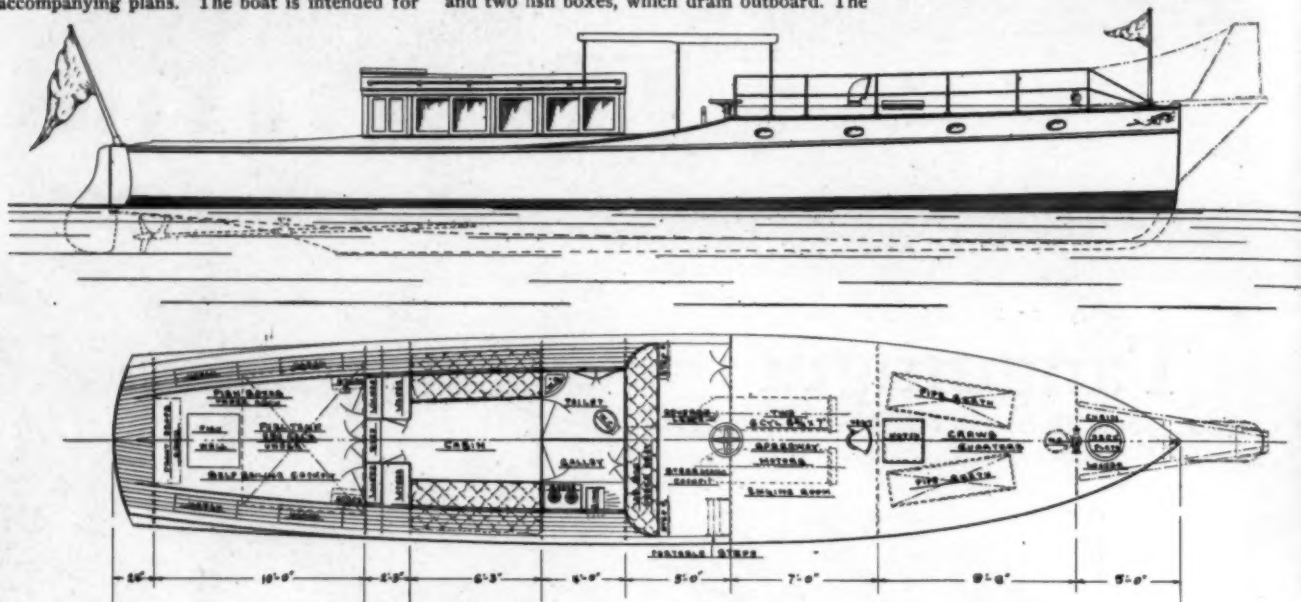
Fast Cruiser for Florida Fishing

A 51-Foot 23-Miler, Suitable for Open Sea Service, Which Is Provided with Harpooning Platform and Cockpit Fish Well—Accommodations for an Owner's Party of Four and a Crew of Two

AN interesting design for a combination cruiser and fishing boat has recently been put down on tracing paper by the Gas Engine & Power Co. and Chas. L. Seabury & Co., of Morris Heights, N. Y., and is shown in the accompanying plans. The boat is intended for

Florida service and is fitted with a two six-cylinder 150 h.p. Speedway engines to drive her at a 23-mile rate to and from the fishing grounds. At the bow there is a harpooning platform, and in the cockpit aft are a fish well and two fish boxes, which drain outboard. The

latter are arranged with hatches so that the fish may be put in without taking them into the cockpit. The arrangement plan shows that comfort has not been sacrificed to speed or convenience.



An attractive high-speed cruiser which the Seabury plant has evolved to meet the requirements of Southern fishing. She is equipped with the usual necessities and has lockers for fish rods, tackle, etc.

A New 67-Foot Houseboat Cruiser

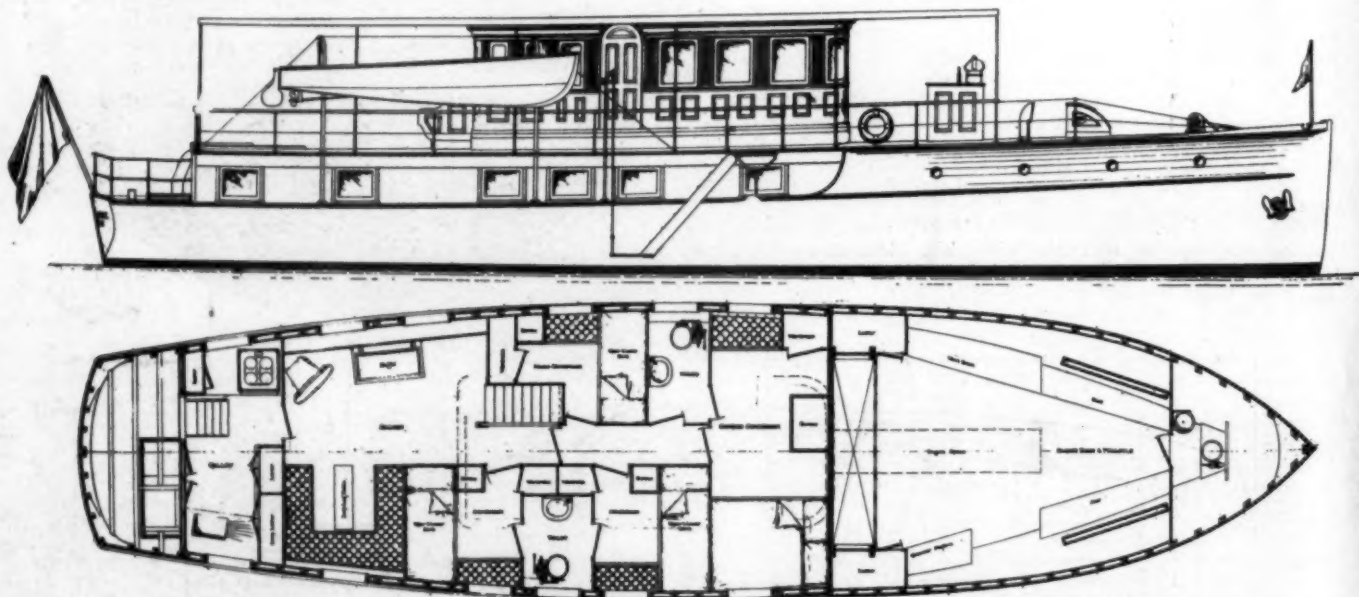
Having Deck-House and Four Roomy Staterooms in Addition to Dining Saloon—Six-Cylinder Buffalo Engine Installed in Combination Motor Room and Forecastle

UNDER construction at the present time from plans by F. S. Nock, of East Greenwich, R. I., is a 67-foot houseboat cruiser for Frederick T. Rogers, of Providence, R. I. This vessel has a beam of 16 feet and her light draft of 3 feet 2 inches makes her suitable for service in the shallow waters of the Florida east coast.

The engine-room and crew's quarters are placed forward, and aft of the motor compartment are the owner's quarters, comprising a large double stateroom with bed, bureau, wardrobe and divan, and on the port side a toilet room with door leading to the owner's stateroom and another to a passageway which extends aft to the main saloon. There are

three single staterooms opening into the passageway, and the galley is furthest aft, accessible from the after deck. There is a roomy deck-house finished in mahogany, and the staterooms are white with mahogany trim.

The main engine is a six-cylinder 7 x 9-inch Buffalo, and there is also a direct-connected lighting set.



A feature of this boat is the compact arrangement of the owner's quarters. The four staterooms open into a common passageway and stairs lead from the deck-house into the saloon which also communicates with the galley

L'Apache, a Speedy 72-Footer

An Attractive Motor Cruiser Built Especially for South Under Her Own Power in the Dead of

Use in Florida Which Was Sent Winter—Monel Fittings a Feature

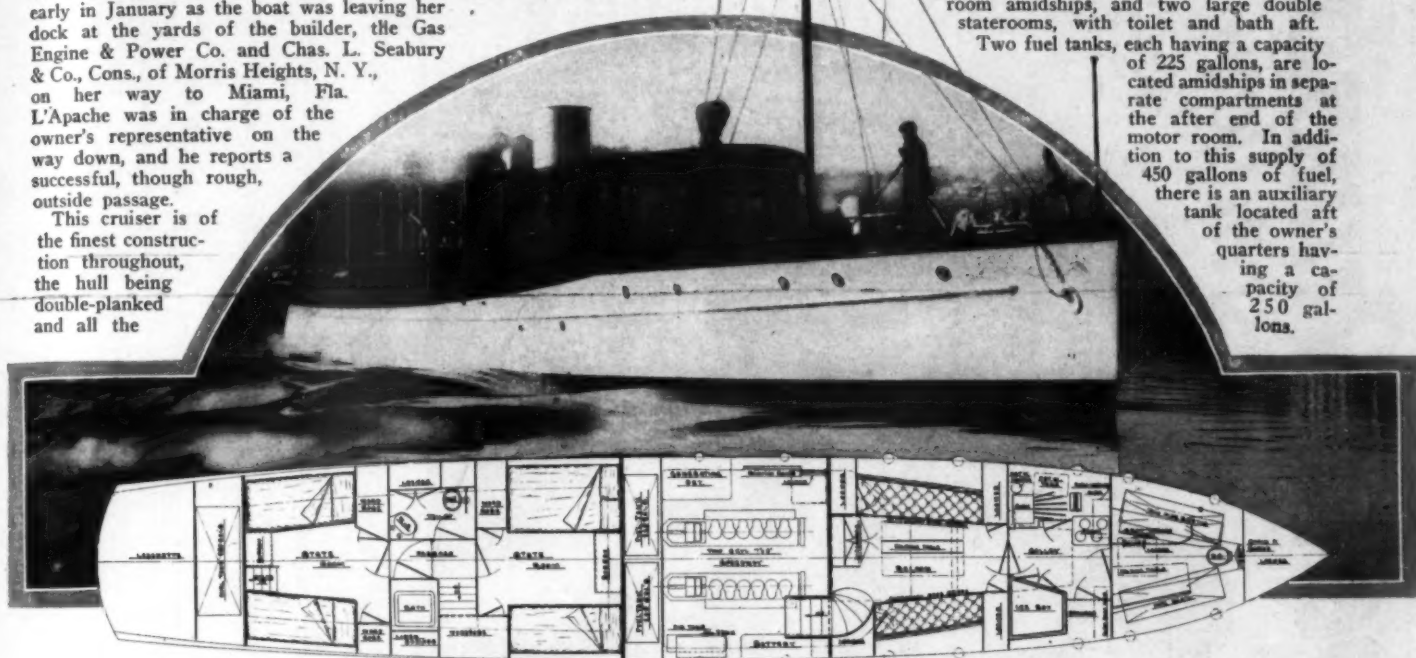
L'APACHE is a 72-foot high-speed cruiser built for James Snowden and designed especially for Florida service. The accompanying photograph was taken early in January as the boat was leaving her dock at the yards of the builder, the Gas Engine & Power Co. and Chas. L. Seabury & Co., Cons., of Morris Heights, N. Y., on her way to Miami, Fla. L'Apache was in charge of the owner's representative on the way down, and he reports a successful, though rough, outside passage.

This cruiser is of the finest construction throughout, the hull being double-planked and all the

joiner work and trim of teak, with monel deck fittings. She is powered with two six-

cylinder 130 h.p. Speedway motors, capable of driving her at a rate of 19 miles per hour. The interior arrangement comprises crew's quarters forward, galley, saloon, engine-room amidships, and two large double staterooms, with toilet and bath aft.

Two fuel tanks, each having a capacity of 225 gallons, are located amidships in separate compartments at the after end of the motor room. In addition to this supply of 450 gallons of fuel, there is an auxiliary tank located aft of the owner's quarters having a capacity of 250 gallons.



This high-speed cruiser is of the finest construction throughout, with double-planked hull, and all joiner work and trim of teak. She is powered with two 130 h. p. Speedways and makes 19 miles

Manitee, of Bradentown, Fla.

A 52-Foot Day Cruiser Which Was Shipped South by Steamer and Proceeded From Key West to Her Home Port Under the Impulse of Her Gasoline Motor—Formerly Named Madge

LIKE L'Apache, Manitee was built up at the Seabury yards, and, like her larger sister, she is now in service in Florida; but, unlike her, this attractive little 52-footer was packed up and shipped South in a steamer.

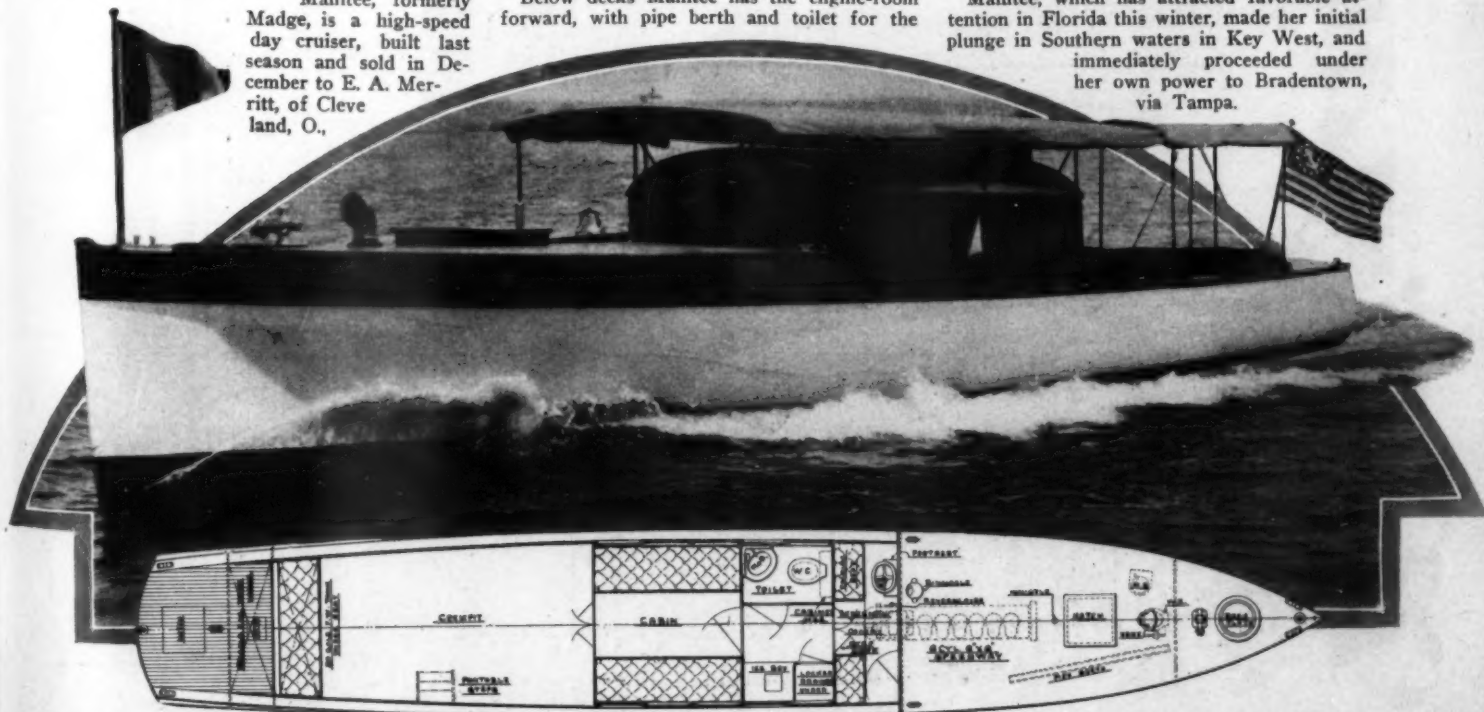
Manitee, formerly Madge, is a high-speed day cruiser, built last season and sold in December to E. A. Merritt, of Cleveland, O.,

for his use at Bradentown, Fla. She is 52 feet over all, with a beam of 8 feet 3 inches and a draft of 2½ feet, and she is powered with an 80 h.p. Speedway motor, which drives her at an 18-mile rate.

Below decks Manitee has the engine-room forward, with pipe berth and toilet for the

paid man, and cabin amidships, with "galley-ette" forward on the starboard side and toilet opposite. There is a very large cockpit aft for the owner, and the helmsman's cockpit is forward of the cabin house.

Manitee, which has attracted favorable attention in Florida this winter, made her initial plunge in Southern waters in Key West, and immediately proceeded under her own power to Bradentown, via Tampa.



Manitee is a type of boat which is particularly suited for use in our semi-tropics. She has a large cockpit and adequate cabin and cooking arrangements, and with her shallow draft can leave the miles behind her without fear of grounding

Building an 18 Foot Runabout

D. C. & Bradley - Part Two

AFTER completing the work outlined in February, A fasten in all the side battens, but before setting in those for the bottom it would perhaps be best first to cut the rabbet in the keel for the garboard. With the battens out you can stand and work in between the frames easily. Cutting the rabbet is not a very difficult job. With a good, sharp $\frac{3}{8}$ -inch chisel simply follow the curvature of the keel, cutting a neat groove about $7/16$ -inch wide (thickness of plank), and about $\frac{1}{4}$ -inch deep up close under the keelson as in the elevation sectional drawing. When this is cut on both sides of the keel put in the bottom stringers and fasten them down.

The keelson frames, chines and in some places even the battens will have to be beveled off so that the planking will lie fair against these parts. The proper angles or slopes can be secured by chiseling, planing or spoke-shaving the stock carefully and trying out for fairness with a straight edge.

The transom knee can be easily fitted at this time and should be first sawed square edged to the usual shape from $1\frac{1}{2}$ -inch oak. The desired slant of the keelson edge can best be obtained by holding the knee against the transom and alongside the keelson and marking off the angle; then saw true to this line and finally fasten into place.

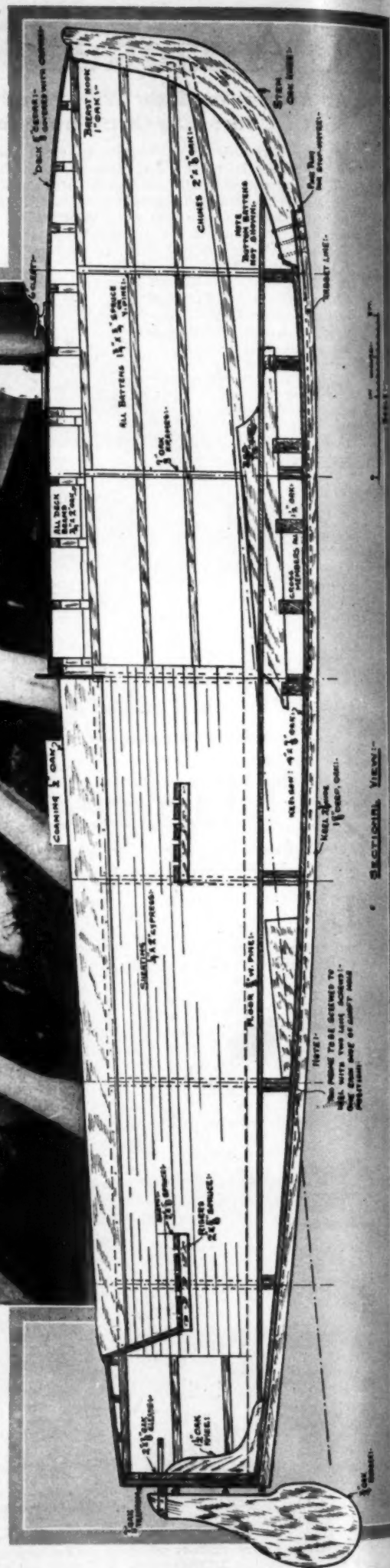
With all these parts securely fastened in position the boat is practically in frame and quite ready to receive the planking. Begin with the garboard (plank nearest keel). From your cedar planking material select a good piece and clamp or nail it lightly to the frames as close to the keel as possible. Set a pair of dividers slightly

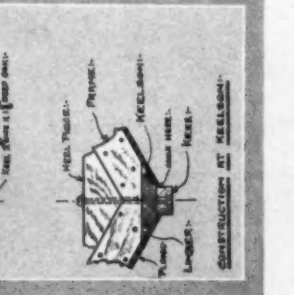
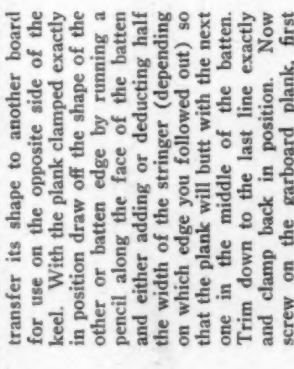
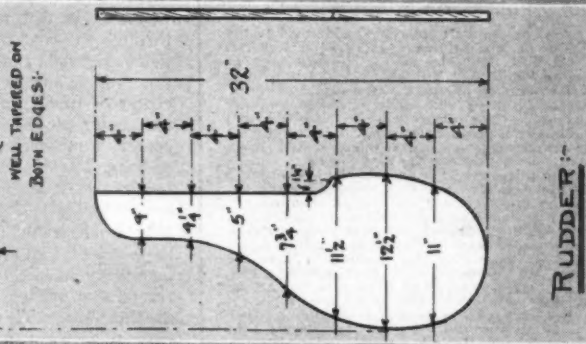
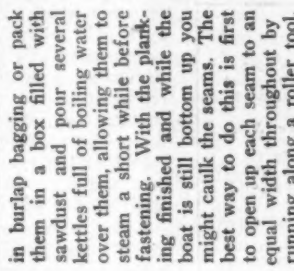
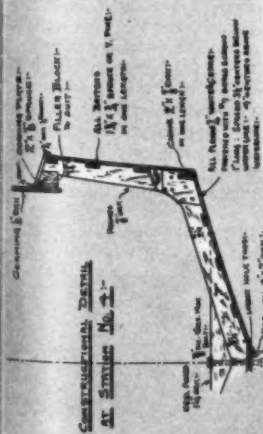
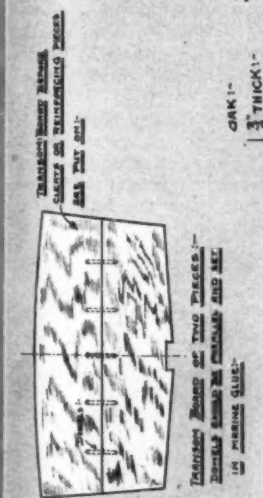
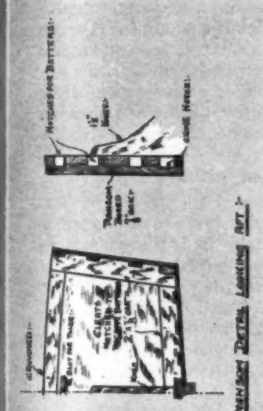
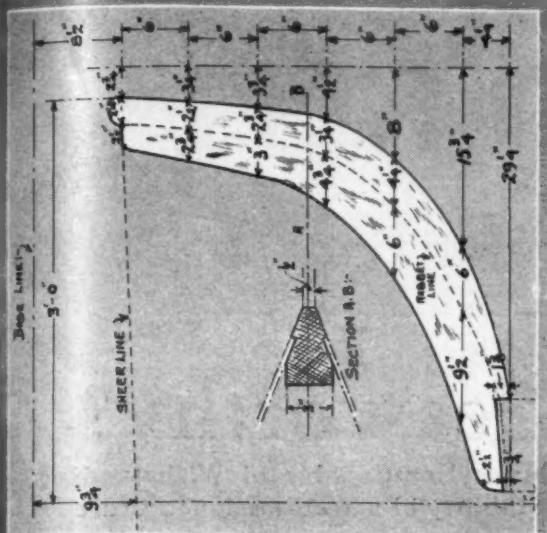
wise of the grain, with fine sandpaper until all the cross marks have been taken off and you have secured a finished job.

The hull can now be turned over, shored or braced plumb and the interior work begun. A good coat of lead and oil should be first applied over the entire interior surface and allowed to dry before commencing work upon the engine bed.

The exact design and position of the engine foundation will, of course, vary with the size and weight of the power plant installed. If you happen to have the motor you can take the necessary measurements without trouble; if not, consult the catalogue or dimensions blue prints cheerfully furnished by the manufacturers of your favorite motor. The sectional side view of the boat shows the bed well forward, so arranged for a light-weight motor. Should your intended power plant weigh over 275 pounds, it would be advisable to set it further aft than shown, in order to secure correct balance and proper trim. The various members of the foundation should be securely bolted and lag-screwed into place exactly central with the

Assembling the frame-parts in readiness to receive the keel pieces. Each frame should be finished up completely and numbered before starting the next one. In sawing out the flared portions of the frames a coarse, flexible hack saw blade, set sideways in the saw frame, will help considerably. The frames are made of pieces of $\frac{3}{4}$ -inch oak carrying the keel together at thechine. In sawing out the the builder will need fifty feet of $\frac{3}{4}$ -inch oak, 10 feet long by 1 inch wide, and a hand plane and a mill.



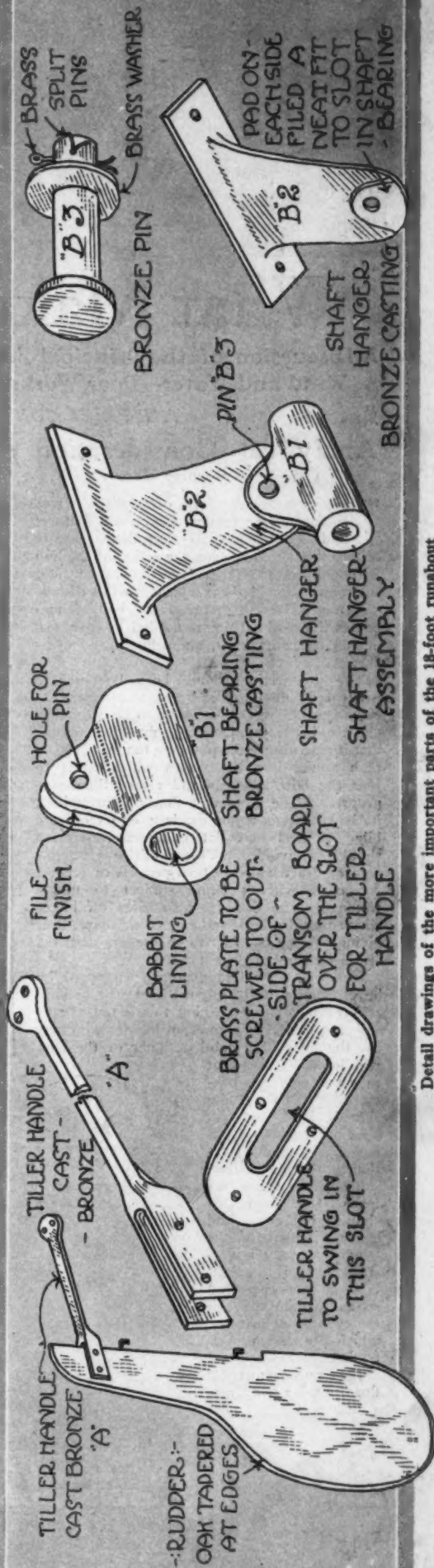


beam of the boat and so constructed as to withstand much vibration.

The locating and boring of the shaft hole is next in line and should be given proper attention. If you are one of those who already have your motor, by all means set it on the bed now, before deck-beams and deck are put on. Take into consideration the diameter of the propeller you intend to swing, and aim to have the hole so placed and bored as to allow the shaft to run through at the least possible angle.

(Continued on page 62)

(Continued on page 62)



Detail drawings of the more important parts of the 18-foot runabout

Prize Contest

in Questions & Answers

What Makes a Hull Seaworthy?

A Discussion of the Principal Features of a Boat Which Make Her Capable of Withstanding Wind and Water—Poor Workmanship May Destroy the Stability of a Well-Designed Craft

THE PRIZE CONTEST—Answers to the Third Question in the January Issue

Analytical Consideration

(The Prize-Winning Answer)

IN considering the form of a hull it is well to analyze the reasons for certain features and determine what effect their presence or absence will have upon the action of the hull in rough water. Therefore, let us consider the round bilged boat as a basis for this discussion, since, if well designed and built, it embodies the cardinal points needed in open sea, namely, seaworthiness, staunchness and comfort.

The bow sections should be full enough to prevent diving into head seas and have sufficient flare above the waterline to keep the bow clear. This reserve buoyancy must be gradual, that it may absorb the plunging tendency rather than pound into the waves which tends to jerk the bow upwards and retard the boat's progress. The bottom of the hull throughout its length needs ample deadrise or pitch from bilge to keel and flat underwater sections should be avoided. This deadrise gives increased draft which in turn permits of greater freeboard without being subject to undue windage. The deadrise also eases off bilges which would otherwise be quick or sharp, thus giving greater comfort to passengers and less strain on the hull.

It is more or less generally supposed by buyers that a well designed boat will be safe and comfortable at sea, but this is not always so. The careless or ignorant builder who may use the lines of a good designer or the man who builds his own boat may put perfect workmanship into a well-designed hull, but by altering cabins, tanks and power plant location, produce a failure. The distribution of loads fore and aft should be even and concentric with the buoyancy of the underwater body if the boat is to be in proper trim so as to gain the efficiency and appearance which the designer intended.

Every symmetrical floating body has a cer-

Questions for the May Issue.

1. Discuss the fuel situation for the motor boat engine, giving your ideas as to what might be substituted, as well as getting the best results from gasoline.

Suggested by O. J. S., Weehawken, N. J.

2. Describe and illustrate how to rig up a suitable riding or anchor light which will need attention and lighting only once each week.

Suggested by W. C., New York City.

3. Give and illustrate your ideas as to the best permanent mooring and buoy for a medium-sized cruiser.

Suggested by C. E. M., Buffalo, N. Y.

RULES FOR THE CONTEST

Answers to these questions, addressed to the Editor of MoToR Boating, 119 West 40th St., New York, must be (a) in our hands on or before March 20. (b) about 500 words long. (c) written on one side of the paper only. (d) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the 20th of March.

The prizes are: For each of the best answers to the questions above, any article advertised in the current issue of MoToR Boating, of which the advertised price does not exceed \$25, or a credit of \$25 on any article advertised in the current issue of MoToR Boating which sells for more than that amount. (There are three prizes—one for each question—and a contestant need send in an answer to but one if he does not care to answer all three.)

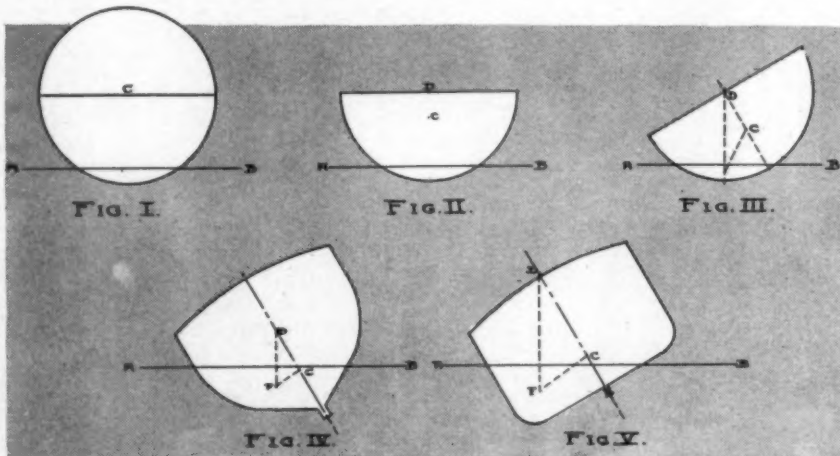
For each of the questions selected for use in the next contest, any article advertised in this issue of MoToR Boating, of which the advertised price does not exceed \$5, or a credit of \$5 on any article advertised in this issue of MoToR Boating which sells for more than that amount.

tain line which in cross-section is represented by a point about which the body may rotate with perfect balance. Take, as an instance, the section of a floating cylinder in Fig. I, $a-b$, representing the water line and point c the center of gravity, representing a line through the center of the cylinder. It may be readily seen that the cylinder has no stability whatever and may rotate at will about point c in section. But why?

If we cut the cylinder in two as shown in Fig. II we immediately find the respective halves to have a surprising amount of stability. This is because of what the designer calls the metacenter which, as illustrated in Fig. III is the point of intersection of perpendiculars through the center of buoyancy of the section when righted and when heeled over, being point d . Thus in Fig. I the metacenter and center of gravity are the same, but in Fig. II the center of gravity c drops while the metacenter d remains fixed as the center of the radius. Therefore we see that so long as the metacenter is above the center of gravity we have stability.

It is desirable, however, in sea boats to have the initial stability not too great but increasing as the heel increases for the same reason that gradual reserve buoyancy is needed at the bow. This is to give the hull an easy motion in a beam or quartering sea. In boat section Fig. IV, which has good deadrise and an easy bilge, the center of buoyancy f is near to the center of gravity c , so that considering f to be a fulcrum on which the

boat is pivoted and distance $f-c$ to be a lever with the bulk of the weight of the boat on point c , we find that the leverage is small, causing the boat to right herself slowly. In Fig. V, however, the righting process is much more rapid since the squarer bilge causes the center of buoyancy to be farther out from the center of gravity, giving greater leverage. A summary of the above suggests a boat with good gradual reserve buoyancy at the



The stability of a boat depends largely on the shape of her under body. Mr. Heustis in his prize-winning answer describes the dependent factors

When you send in your answers you must state what you will take for a prize should you win one

bow, deadrise throughout its length, easy bilges, as much freeboard as is consistent with the draft of the hull, trimmed in accord with the designer's intentions—not too great initial stability but plenty of reserve. Such a boat will afford maximum comfort and safety in all kinds of weather.

R. W. HUESTIS, Springfield, Mass.

Dory Type Favored

WHEN the boatman thinks of a dory, he generally pictures a well-constructed, high-sided, lap-straked hull, having a full overhanging bow, scooped sheerline and a gradual flare running its entire length. These characteristics, combined in the proper proportions, make the dory the wonderful sea boat it is.

Lap-strake construction cannot be excelled where seaworthiness is the prime consideration and too much emphasis cannot be laid upon its advantages. A boat so built will be found stronger, more water-tight and cheaper than the smooth planked craft. The overlapping planks give greater buoyancy and help materially in breaking a choppy sea and as for looks, one cannot help but admire their ship-shape and able appearance.

Freeboard is, of course, necessary in sea-boats, and the dory, due to the scooped sheerline, possesses plenty of it, especially at the ends. With exceptional freeboard one naturally expects a deep draft to prevent topheaviness. However, this is not the case, for in its place the dory has a flat bottom, which gives it the same seaworthy qualities that a flat plank has. These qualities will be readily appreciated if you will but place a plank in a seaway. You will soon realize that it is practically impossible to turn it over, unless it can be caught broadside by a breaker sufficiently large and curling that will pick it up and "flip" it over, and nine times out of ten it will not take the "flip" but will remain right side up despite the breaker's size.

Although a small portion of the underbody of the dory is flat it does not cause pounding. This flat section has its greatest width just a little aft of amidships. It has a rocker shape so that the bulk of the boat is waterborne in the middle and the ends are so fined

off that there is little if any flat surface presented, when jumping in a head sea, to permit pounding.

As regards the bow and stern, both are overhanging. The former being full not only serves to give a gradual lift in a head sea but prevents the bow becoming buried in a following seaway. The latter, while differing in width more or less according to the model, also overhangs and does not permit a following sea to break over it.

J. K. BIRCH, Brooklyn, N. Y.

Honest Construction a Factor

SEAWORTHINESS, as applied to a boat, not only embraces the mould of the hull, but also means good, honest construction that it may stand without leaking the strains to which rough water subjects it. The smallest skiff may possess seaworthiness, but the term is here applied to those boats in which the sailor cruises in open water.

Correct ratios as regards length, beam and draft, as well as the proper distribution of weights, are secondary only to construction. Modern practice places the ratio of length to beam at from 4:1 to 6:1 with a draft of from 3 to 6 feet. But whatever they may be, a clean underbody more than that above the waterline will make for seaworthiness. The question concerning the most efficient bow and stern is debatable. The writer favors the slightly overhung bow and the compromise stern, but for that matter other models have positively demonstrated their seagoing qualities. This model will necessitate a more or less rockered keel. It may make her "dance" in seas about her own length but it will tend to eliminate diving and taking green water aboard.

The plumb bow of the ocean tramp steamer, with its well-known stern, is continually proving its seaworthiness, and many yachts are modeled along the lines of these ocean carriers, duplicating the bow, stern and underbody.

But whatever model, these points are essential:

The bow section must not be too fine; that will raise the center of buoyancy of that particular section, from A to B (Fig. 1) and cause the boat to plunge quickly and throw the spray higher than the bow shown in Fig. 2, and with a head wind will throw it on to the boat.

The midship section must be easy and the freeboard plumb, or with a little tumblehome. The stern should be the midship section pinched in to meet the buoyancy required at this point and with lines that will allow the quartering wave and the wake to leave smoothly and not rely upon the hull being torn away from them to cause their severance from it.

J. E. MURPHY, New London, Conn.

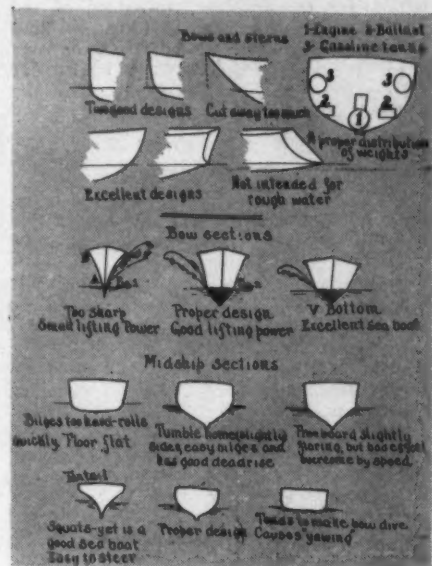
Points for the Amateur

THE main feature relating to the seaworthiness of cruisers of the smaller sizes is topheaviness. It is to be taken for granted that no reliable boat builder would turn out a hull defective in this manner, but it often happens that when an amateur, or even one fairly well versed in boat building, attempts to rebuild, say, an open boat into a cruiser, seaworthiness is sacrificed to headroom, and perhaps a heavy spar stuck on with considerable sail, thereby inviting disaster.

The beam of the boat is second in importance, and on craft of forty feet or less should never be much less than one-fourth of the length. Every boat enthusiast knows how well the old converted cat boats ride the waves, their blunt bows and great beam in proportion

to their length keeping them dry almost invariably.

However, if the center of gravity has been correctly calculated by the designer, and the breadth is sufficient, the next thing is the flare of the bow. I have found that a comparatively blunt-nosed craft with considerable flare will make better time in a seaway than a sharp-pointed, speedy craft, because in the former the flare will throw the water off to the sides and keep the bow from digging into the waves as it comes down, while the latter type will be wallowing along, forcing its way through the water instead of on top of it, while the large waves wash merrily back into the cockpit and the small ones throw huge sheets of spray on the unhappy helmsman.



Diagrams of various types of hulls drawn by Mr. Murphy to show the advantages and disadvantages of all

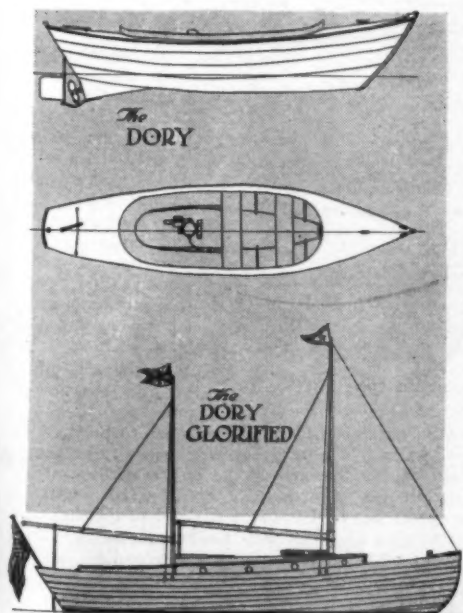
The sheer, or rise of the deck from a horizontal plane, goes hand in hand with the flare, for without sufficient freeboard at the bow the flare is impossible without spoiling the symmetry of the boat. Also, a large amount of freeboard due to a considerable sheer will in itself aid seaworthiness by tending to eliminate dipping the nose.

When arranging the interior of the cabin, see to it that there is not too much weight in the bow, for there is a great difference in the way a given boat will ride in a sea with seventy-five gallons of gasoline in a tank up ahead, and the way she will behave with the tank empty.

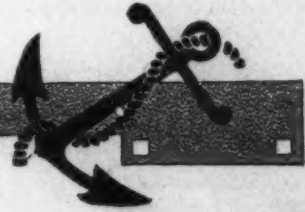
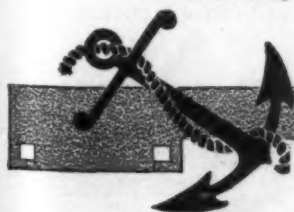
D. HARRY HAMMER,
Chicago, Ill.

Metacenter Defined

THE metacenter of a floating body may be defined as the point where a vertical line drawn through the center of buoyancy of the underbody and a vertical line drawn through the center of gravity of the boat meet, when the vessel is slightly inclined. The metacenter must always be above the center of gravity to make the boat stable and the distance between the center of gravity and the metacenter is known as the metacentric height. The determination of the proper metacentric height is one of the most important problems to determine in designing a boat. Cranky boats have a small metacentric height and stiff boats have a very large one.



Mr. Birch would apply to a cruiser the lines of the dory



Propeller-Rudder Arrangements

How These Items of Equipment Should Be Designed and Installed to Give the Best Results in a Runabout—The Subject Not Necessarily Restricted to the Attainment of Speed

THE PRIZE CONTEST—Answers to the Second Question in the January issue

Two Types of Fixtures

(The Prize-Winning Answer)

THE matter of propeller and rudder arrangements is one on which considerable thought ought to be taken. Several things must be borne in mind: first, the owner's requirements as to whether speed or protection for the propeller is deemed of the most importance; second, the water and kind of bottom over which the boat is to be run; third, whether the boat is to be hauled out for repairs on the beach or lifted out of the water directly by means of tackle or a marine railway. These three considerations must govern the type of underwater fixtures used.

A few primary considerations must be thought of before designing the fixtures. The rudder for a runabout should be back of the propeller and as far aft on the boat as possible to exert the greatest turning force on the boat. On the transom itself is perhaps the best place, although some people consider this unsightly. The rudder should be balanced, that is, should have about one-third of its submerged area forward of the axis about which it turns. It should be deep and narrow in preference to long and shallow so as to overcome the tendency to follow the direction of the quick water from the top of the propeller. In area it should be about one and a half as many square inches as the product of the length and beam of the boat in feet, and a little less if the boat is much over 25 feet in length.

The propeller must be about a foot forward of it for the best results. The reason for this is that the water is faster in behind the propeller than it is forward of it and the strut being of necessity longer the drag on the boat must be considerably greater. The rudder should be as thin as possible, a very satisfactory kind being shown in the sketch.

As regards propeller protection, this depends on the considerations mentioned above. If the boat is to be driven over treacherous bottom where the propeller is in danger, protection must be afforded except in the case of where speed is the first requirement. If the owner is averse to repairing a loose propeller or substituting a new one from the water, protection is desirable. If, on the other hand, the boat is to be driven in water with good depth and free from flotsam and there are good facilities for hauling out, protection is unnecessary and undesirable. Adequate protection is

Speed Not the Only Factor

IT is quite likely that there will be several suggestions offered in answering the above question. The viewpoint taken when considering the word "best," whether the runabout is a 15 or a 30-miler, whether used in deep or shallow water, inland lake or for an occasional outside run, will make a difference in the way the subject is handled.

The writer does not believe that speed should necessarily be included in the "best" results; rather an equipment that will approach all requirements as nearly as possible is "best."

It is very essential to deliver the water to the propeller and discharge it in as straight a line as is possible. Any decided obstruction fore or aft of the propeller will check the free flow, causing eddies and changes of direction of flow which will retard and lower the efficiency of the propeller outfit.

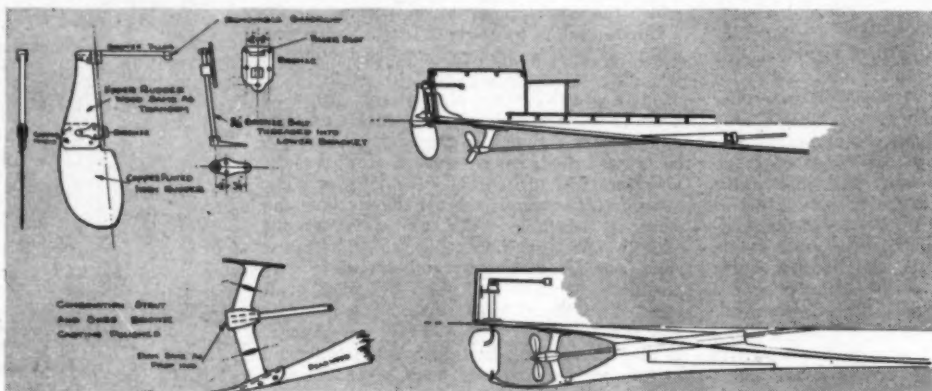
Two boats of amateur construction, 18 and 21 feet long respectively, have propeller and rudder equipments as shown in the illustrations.

To give the boat steadiness, it was decided to use a keel running from the bow to the propeller strut, shown in Fig. 1. This keel was so built into the hull framing as to greatly add to the strength of the completed boat.

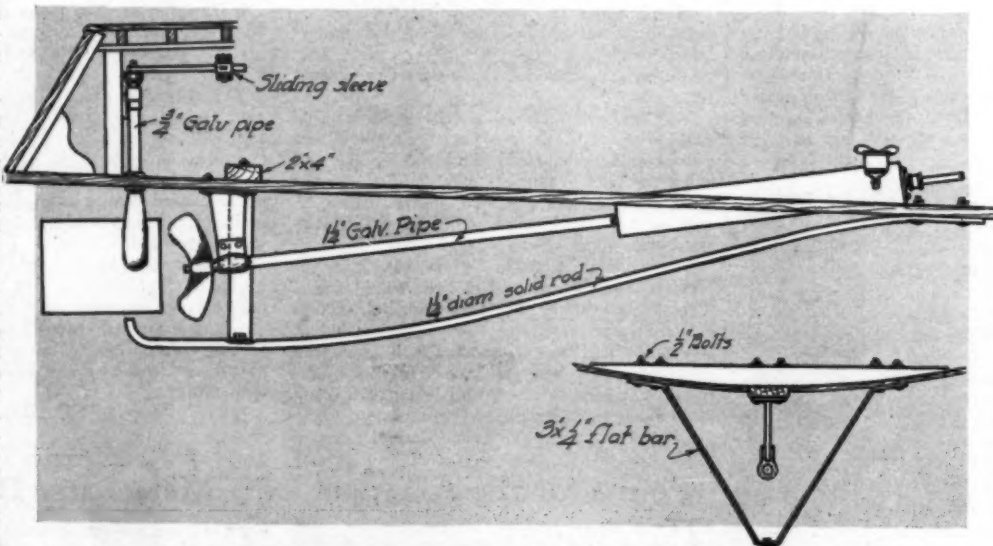
As the sea end of the shaftlog and the dead-

wood offer considerable resistance to the flow of water to the propeller, the keel is to be cut out as far forward as the hull planking will permit, as shown in Fig. 1. The upper edge of the keel is to be reduced to the form shown in Fig. 5, which is a section of Fig. 1 at f-f. This construction offers very little obstruction to the water and thoroughly protects the propeller and rudder from mechanical injury.

The after end of the keel is bolted to a cast bronze strut, which in turn is bolted through the planking to an oak piece fitted



Drawings of two propeller-rudder arrangements suggested by W. P. M. Especial care should be given the design of the rudder



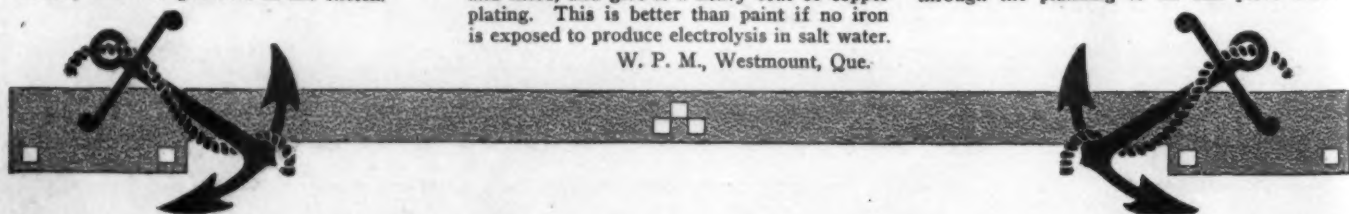
Plans of the fixtures used with success by L. R. K. on his 24-foot auto type boat

a considerable drag on the boat and may make a difference of 3 to 4 miles an hour in speed. The owner must decide for himself, as sometimes either type may be used.

In the accompanying sketch I have shown two types of fixtures which may be used. Of course, if the boat is designed without any deadwood and protection is desired it may be made up of wrought iron.

Care must be taken to reduce friction in each part. A good method for iron work is to bevel each part after it has been forged and fitted, and give it a heavy coat of copper plating. This is better than paint if no iron is exposed to produce electrolysis in salt water.

W. P. M., Westmount, Que.



over and bolted to the filler, *c*. This cast bronze strut is designed with a housing for the propeller shaft bearing, shown in Fig. 3. The bearing is a bronze or babbitt metal casting. These are made in halves, so that they can be removed and replaced readily. They are locked into the housing by a pin, shown in Fig. 4.

As these bearings only fit the housing at their centers (Fig. 3 at *e*), they align themselves with the propeller shaft, making a perfect ball and socket bearing. Maple and oak bearings soaked in oil have been used with good results, one set of oak bearings lasting a season, in fresh water.

The keel cut out as shown allows the boat to respond readily to the rudder, and with the Y form to the strut (Fig. 2), offers so little obstruction to the water that a two-bladed propeller can be used without any perceptible vibration. A cast bronze skeg is extended aft of the strut (Fig. 1), and forms the lower bearing of the rudder post.

One of the boats has a rudder made of sheet stock riveted to the rudder post, and the other a solid cast bronze rudder. The inboard end of the rudder post is fitted with a packing box, just below the quadrant.

W. W. MONROE,
Worcester, Mass.

The Two-Armed Strut

FOR a runabout, where speed is not the only consideration, the form of propeller strut shown in the sketch is probably the best. The two arms will offer more resistance than one, but the strut is very much stronger than one with a single support and will not vibrate nearly so much. The type of strut located aft of the propeller and sometimes incorporated with the rudder support is a more expensive construction and a refinement hardly necessary on the average runabout; it has the further disadvantage of making the propeller hard to remove.

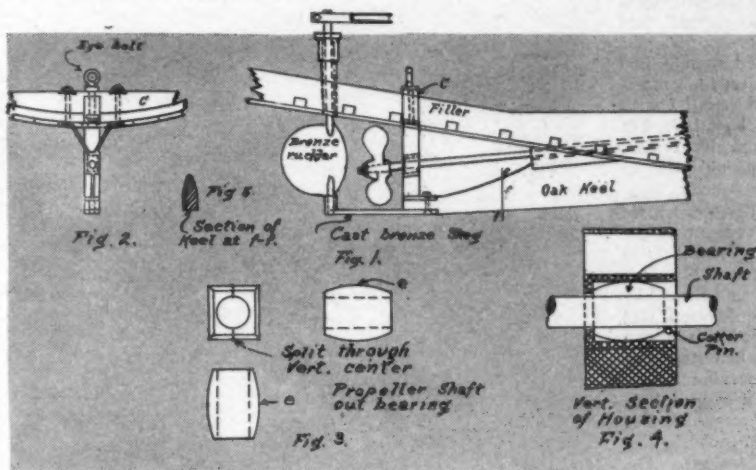
The two-armed strut shown can be cast from a pattern made to suit the boat or a stock type might be found that would fit; some of them are made with adjustable arms and a self-aligning shaft bearing. It is best to have the bearing babbitted as this saves wear on the shaft. The cross-section of the arms should be as shown, tapering aft and more blunt forward, giving a streamline form; the bearing hub and brackets should be given the same form. The strut should be very strongly fastened to the hull with through bolts and reinforcing blocks inside. The propeller should have a tapered nut on the after end as shown.

The type of rudder shown has no bottom support, the boat having no skeg, and since the part at X in the sketch is the weakest it should be strongly reinforced here by being swelled out. The blade can be either cast onto

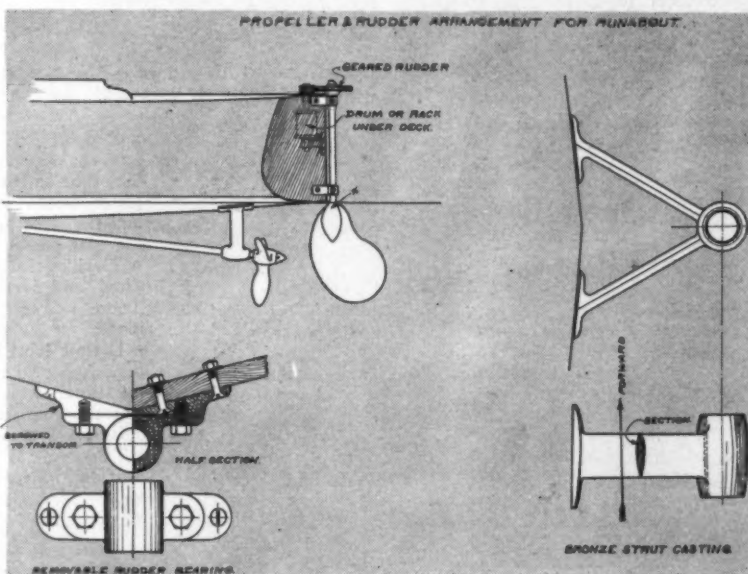
the shaft or made out of a plate of yellow metal and the swelled out part of the shaft riveted to it.

The lower rudder bearing should be located above the waterline so as to offer no resistance to the water. A bearing like the one shown, in two parts, makes a substantial construction and at the same time the rudder can be easily removed by taking out the bronze cap screws. There is no danger of the rudder being bumped out of its bearings or of its jumping out while the boat is under way.

If the rudder has a tiller above deck then the lines have to be carried along the decks where they are likely to be chafed and damaged and get wet; while, if the tiller is under the deck, it has to be carried through a slot cut in the transom. Water will slop through this slot when backing up and the rudder will be hard to remove. To over-



Arrangement of propeller and rudder considered by Mr. Monroe the most satisfactory when other features than speed are considered



Mr. Parker favors the two-armed strut because, although it offers more resistance, it is stronger and less subject to vibration

come these difficulties the rudder shaft has a bronze gear (or gear sector) on its upper end which meshes with a smaller gear on deck. This small gear has a shaft which is carried below deck and turns a drum or rack, thus allowing the lines to be run out of sight and protected from damage. At the same time the gears do not interfere at all with the removal of the rudder.

H. H. PARKER,
Oakland, Cal.

As Used on a 24-Foot Auto Type Boat

THE rudder and propeller arrangement of a 24-foot auto type boat that gives satisfactory service is illustrated herewith. It has been in use three years.

A short outside shaft log is fitted to the keel, extending just far enough back to give a sufficient face into which a 1 1/4-inch galvanized pipe with long thread is screwed—of course, in line with the shaft center. At the after end a regular type bearing, with one end threaded and the rest babbitted, is screwed to the pipe. This makes a water-tight connection between bearing and shaft log. A stuffing box is fitted inside of the boat, and between the stuffing box inside and the bearing outside the space around the 1-inch shaft in the log and pipe is kept filled with grease by a large grease cup, keeping both bearings well lubricated at all times.

Where the bearing plate bolts to the keel, two of the bolts go through a fitted 2x4 placed crosswise to support at its ends a V-shaped frame of 3x3/4-inch flat iron. This piece takes the strain from the planking where the frame bolts to it, with two 3/4-inch bolts on each side.

This iron frame supports at the bottom a 1 1/4-inch solid iron rod—the other end of the rod is flattened and bolted to the keel. This protection for the propeller and rudder is not connected to either in any way and can be removed without touching the others. In case of a severe knock that would push the skeg out of line, no harm is done the propeller or rudder, as might happen if they were all connected. No doubt an increase in speed can be obtained by removing the skeg, which weighs over 50 pounds, but on account of the rocky nature of the water the boat is used in, I prefer to have it on.

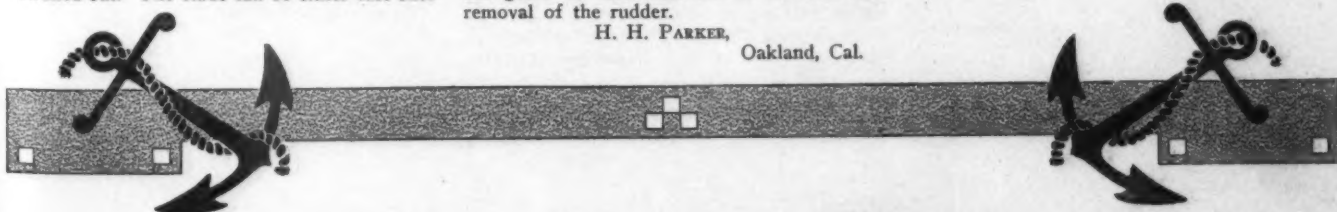
The rudder post turns in a 3/4-inch pipe screwed into the keel with a lock-nut at both sides. At the top, a coupling and a reducing bushing are used to form a stuffing-box, packed with cotton rope and graphite grease.

On the tiller slides a loose sleeve fastened to the tiller cable between the pulleys. The sleeve runs crosswise on guides, and keeps the cable at an even tension in any position. One other advantage is the added leverage when most needed—when the rudder is swung way over.

With the 16-inch propeller there is a 2-inch clearance top and bottom. The wheel is bronze, but the shaft is steel and to preserve the shaft there is a zinc collar between the bearing and propeller hub.

This zinc collar serves to prevent the electrolytic action which sets in in salt water, using up the negative element.

L. R. K.,
Philadelphia, Pa.



Changing the Shaft Hole Location

Various Methods Whereby the Angle of the Bore Through the Deadwood May be Changed to Meet the Requirements of a New Motor or an Alteration of Position of the Present One

THE PRIZE CONTEST—Answers to the Third Question in the January Issue

Used the Old Shaft

(The Prize-Winning Answer)

HAVING decided to remodel my cruiser and move the engine about four feet ahead, I was obliged to change the shaft hole. The boat has a keel, *A*, about 2 inches thick and 8 inches wide, with floors 2 inches square crossing it, and keelson, *B*, 1 3/4 inches by 6 inches, as shown in the sketch. The shaft was carried through the keel in a brass tube, supported at the outboard end by a Y-shaped strut. The tube is fastened to the hull by a bronze casting, *D*, which is riveted and soldered to the tube *E*.

After removing the tubing and strut, a line was put through the shaft hole on the center-line of the boat, and stretched parallel with the angle desired for the new shaft hole, but about three inches higher than its center. Points were marked so that the line could be replaced if necessary.

Inside the boat the old propeller shaft, used for a boring bar (because, on account of the war I had more time than money) was lined up parallel with the stretched line. This shaft was supported in two or three places by wooden bearings bolted to the keelson and the engine bed timbers. To feed this bar, a piece of seven-sixteenths cold-rolled steel was threaded twenty to the inch for about eighteen inches, and screwed into a tapped hole in the end of the shaft. This screw worked in a piece of iron, tapped to fit, which was clamped in various positions as needed.

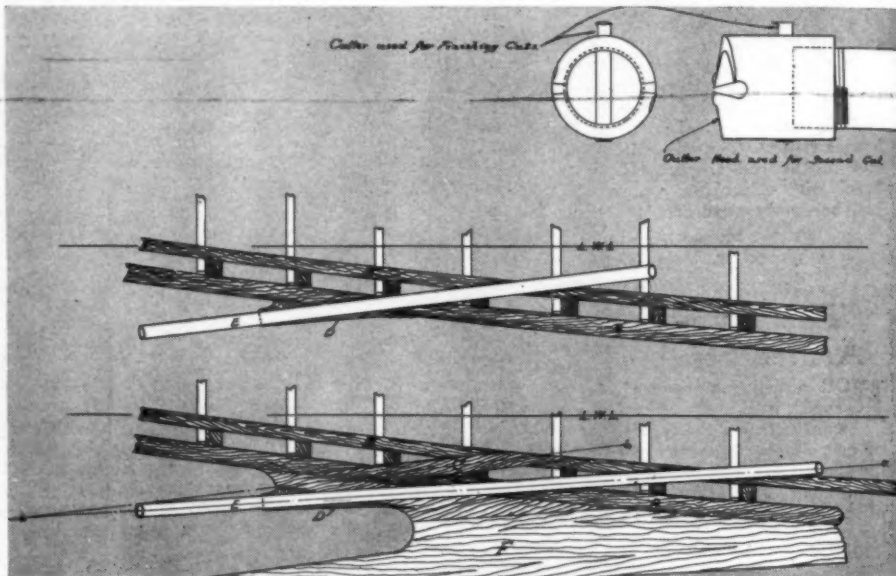
To start the hole at the acute angle at which it entered the keelson, the wood was cut away with bit and chisel, using the bar as guide, until far enough in to permit the auger to be entered. An ordinary short auger, with handle removed, was used and it was turned with a wrench, being at the same time crowded ahead by the feed of the shaft, which was

to use a cutter head, screwed on the end of the shaft. This was made of short pieces of machine-steel tubing, tapped and the outside turned true by turning it up on the tap centers. The end was sharpened similarly to a wood-bit, as shown in the sketch. The bar was run through the hole again, with this cutter on, enlarging the hole about 3/16 inch, and bringing it nearer to true. Any tendency to run was counteracted by blocking the bar, as occasion required. To further enlarge the hole

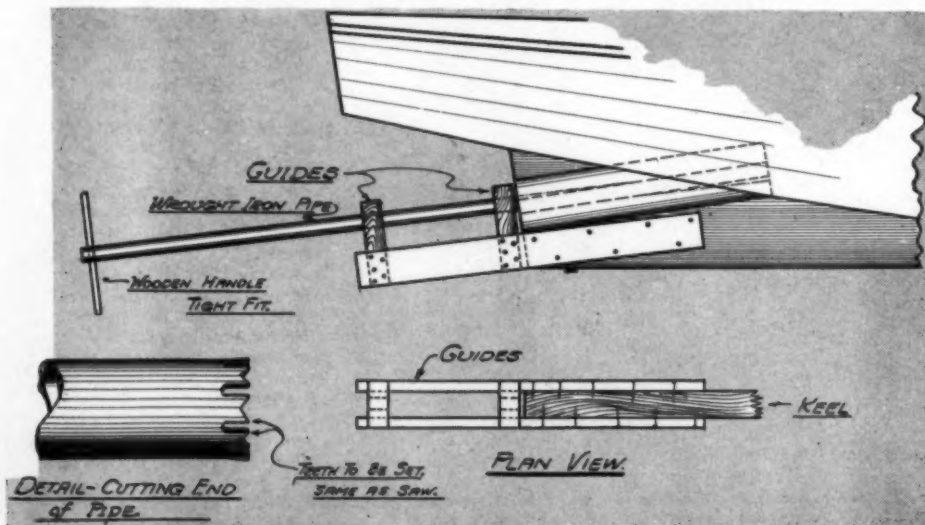
ished hole was about 1 3/4 inches in diameter, and a little over 4 feet long.

After the hole was finished through the keelson, a wooden ring about two inches long was made to fit the shaft and hole in the keelson. This was split, for convenience, and the two halves put around the shaft and driven into the hole, making another bearing for the guiding bar, nearer the working area.

A piece of oak was turned up to fit the old shafthole, coated with plenty of white lead



L. F. B. attached a cutting head to his old propeller shaft and trued up the new hole from inside the boat, later plugging up the old hole with a piece of oak



W. E. M.'s method of bracing the wrought iron pipe which he used for a cutting tool, and a detail view of the cutting end of the pipe

turned by hand. Later the auger was pieced out by being driven into the end of an iron pipe, and thereafter turned with a pipe wrench.

This hole was not exactly accurate, and I did not expect it to be. The next move was

a piece of square steel was run through holes previously drilled in the cutter-head, one end sharpened to a cutting edge, similar to an expansion bit, and held in any desired diameter by screwing the end of bar up against it, as in the sketch. Two or three light cuts through with this cutter brought the hole to desired size and accurate alignment. The fin-

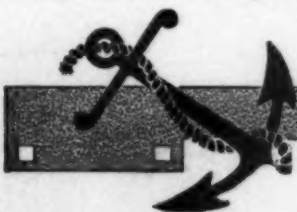
and driven in, fastened with a few screws and caulked on the outside. (*C* in sketch). The tube and strut were now put in place, thin paper blocks fitted under the feet of strut, and the strut bolted in place—the joint where the tube passed through the keel was caulked. A blocking forming part of an open skeg was fitted under casting *D* and bolted in place. There was no skeg before the change was made.

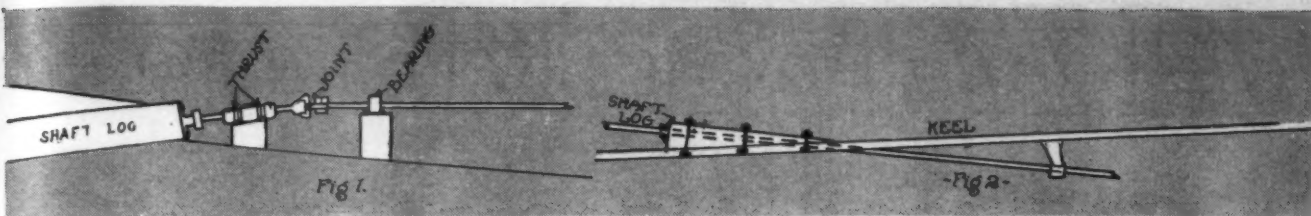
If time is of more consequence to you than money, a cold-rolled steel bar, with cutter in the center, and supported both inside and outside the boat will do the job more easily and quickly. I bored the original hole this way.

The original shaft angle, *a-b*, was seven degrees from the waterline. The new angle, *a-c*, is three and three-fourths degrees from the waterline. L. F. B., New Britain, Conn.

Boring with Iron Pipe

WHEN we began to lay in the engine bed in our open launch, built on the knock-down frame principle, we found that owing to changing the position of the motor to suit our own ideas, the shaft hole would have to be bored at a new angle. The job seemed rather difficult and there was much speculation as to the best and simplest way of doing it without an excessive expenditure of valuable time or money for special tools, until the plan herewith outlined was adopted





H. F. S. recommends the use of universal joints to obviate the need of boring a new shaft hole, but he also shows how a new shaft log can be installed in place of the old one

and found to do the work very satisfactorily. After deciding on the position of the motor we projected, with the aid of a string, a line to represent the centerline of the propeller shaft, from the motor to the inside or forward end of the shaft log. This line was located so as to utilize as much of the original shaft hole as possible in boring for the new one, in order to avoid weakening the shaft log more than was absolutely necessary. This location was determined by trial, taking the angle between the original shaft hole and the string with an ordinary carpenter's bevel, and plotting it to full size on the floor or other convenient flat surface. This method showed where the new hole would come through, with reference to the old one, at the after end of the shaft log. If this was too high or low, slightly changing the angle of the string brought it to the proper place.

For the boring, a piece of wrought iron pipe was used, into the end of which saw teeth had been cut with a file. This pipe was rigidly guided by a frame nailed to the deadwood carrying two blocks bored slightly larger than the pipe, into which the pipe was introduced, as shown in the accompanying sketch. A suitable size of standard wrought iron pipe can be procured for almost every size of shaft hole.

The frame or guide should be located accurately by the same method as was described to locate the string inside the boat, excepting that the method is reversed. The teeth may be made as shown in the drawing, and must be set or bent alternately, one in and one out in the same manner as a carpenter's saw, to provide clearance for the pipe while boring. The pipe, as shown, will cut when turned in either direction, owing to the profile of the teeth, but as wrought iron is not the best in the way of cutting edge metals, it will have to be withdrawn and sharpened with a file probably once or twice during the operation. A hole should be bored through one end of the pipe and a bar of iron or handle of wood forced in to make a convenient grip for boring. Of course, a sleeve of tool steel shrunk on the pipe with saw teeth cut into it and properly tempered would make a much better though more expensive boring instrument, but where there is but one shaft hole to be bored, a wrought iron pipe will answer the purpose.

W. E. M.,
Philadelphia, Pa.

in almost every conceivable case, be much better accomplished by other means.

Several years ago the writer struggled with this problem. He wanted to move his engine from a position as close as possible to the inside stuffing-box, to a new location halfway between the bow and amidships. The shaft, because of the angle of the shaft hole, would

never a moment's trouble in all these years.

To make a successful installation (see Fig. 1), place a thrust just aft of the joint. A pillow block, with a ball race on each side, held by pulley collars, will carry the thrust on both "go ahead" and reverse. Next place the joint, keyed to both shafts and with a set-screw in one hub only; then another pillow block, if there is room for it, between the joint and the engine or gear. It is regarded as good practice to have two joints in the shaft line, but the writer has found a single universal joint mounted in this way eminently satisfactory. Such an outfit will readily care for an angle of as much as seven degrees. It is doubtful on the other hand whether a neatly made shaft can accommodate a shaft hole seven degrees off center without developing serious structural defects.

There is one type of shaft log, however, in which the desired change can be made; in fact, any angle in reason can be obtained. This type represents the construction (Fig. 2) in which there is a light keel, to which a small shaft log is bolted, either inside or outside of the boat. In such a case simply unbolt and remove bodily the old shaft log and make a new one to suit the present needs. When the new one is in place, the hole through the keel can be easily made to accommodate the shaft at the new angle. The writer did this very successfully with a light runabout whose keel was at that point only two inches deep by four inches wide. The shaft log was bolted on the inside, with inside stuffing-box.

H. F. S.,
New York, N. Y.

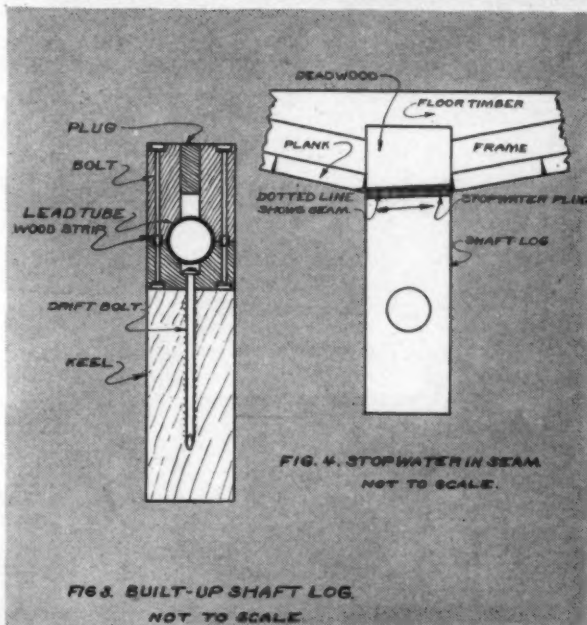
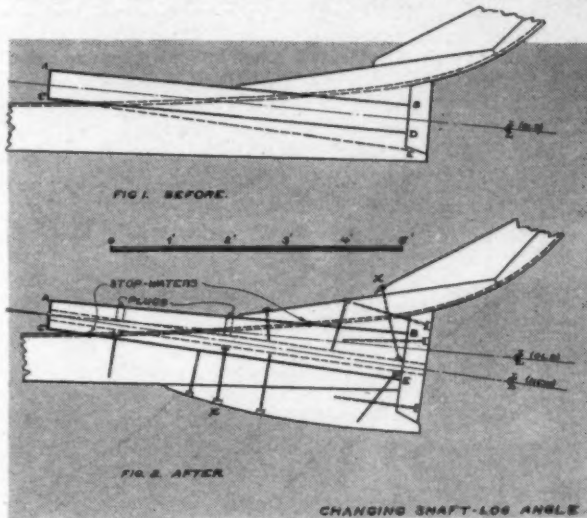
Installed a New Shaft Log

THE party who "designed" my boat and set up the frame evidently worked by rule of thumb and must have smashed said thumb with his top maul, for when the frame was set up and the hull planked it was found that the shaft angle was so low that it would be impossible to install any make of engine whatever and that the shaft would come out so high in the stern post that the tip of the propeller blades would be above water.

The only remedy for this was to install a new shaft log with the shaft hole at a greater angle, for it was impossible to rebore the original one which was six feet long. So the old log was sawed and chopped out and the bolts which held it pulled out or sawed off. This was a big job, for, as I said, the log was of oak, six feet long and four inches thick (the same as the keel and deadwood) and resulted in the destruction of various bits, chisels and other tools.

I decided to make the new log wedge-

(Continued on page 62)



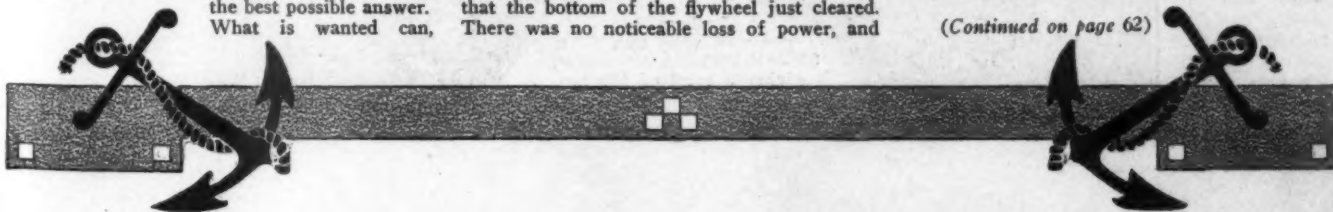
Mr. Parker had to install a new shaft log because the designer worked by rule of thumb and smashed either the rule or the thumb

Uses Universals Instead

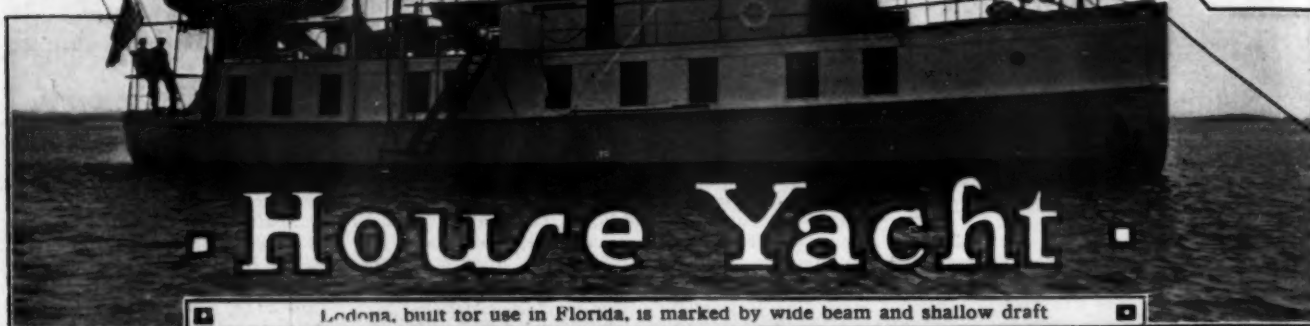
IF you wish a simple method of changing the location and angle of the shaft hole through the deadwood take my advice and don't do it. This is not only the simplest, but the best possible answer. What is wanted can,

have required the engine to sit on the coaming. Such elevation might be advantageous for accessibility but other favorable reasons are few.

A good universal joint permitted him to set the engine horizontal, and so low in the boat that the bottom of the flywheel just cleared. There was no noticeable loss of power, and



A 77-Foot Motor



House Yacht

Lodona, built for use in Florida, is marked by wide beam and shallow draft



The roomy deck-house is used as dining saloon and living room.



There is an ample amount of awninged deck space

LODONA is an interesting shoal-draft houseboat which was built by the Mathis Yacht Bldg. Co., of Camden, N. J., for use in Florida waters. Although having a length of 77 feet, a waterline length of 71 feet and a beam of 18 feet 6 inches, she draws only 2½ feet of water. In spite of this shallow draft Lodona is unusually seaworthy for a boat of her type, and it is our understanding that she was the only houseboat that stuck it out during the storm in the 1915 cruise of the New York Yacht Club. In addition to holding membership in the New York Yacht Club, James G. Wilson, owner of this houseboat, also belongs to the Larchmont Yacht Club, the Horse Shoe Harbor Club, and the Biscayne Bay Yacht Club.

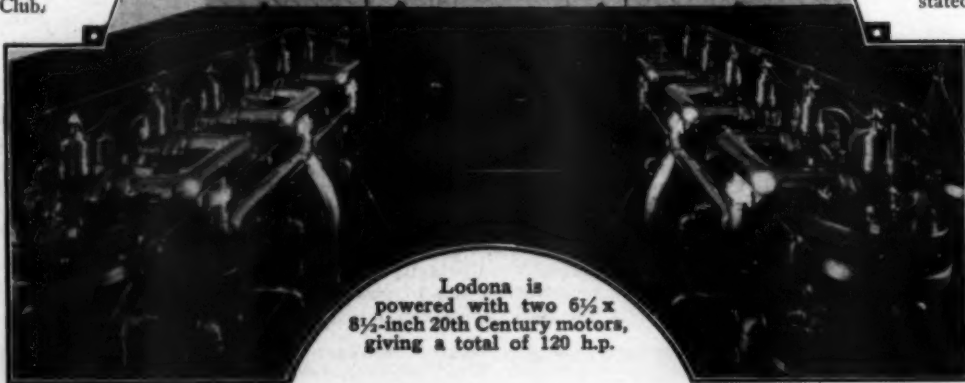
In design, Lodona is a moulded shaped boat of the river steamer type with a flare forward to the main guards and from this point up to the main deck practically straight from the stem to the after deck. This design was worked out to



The owner's state-room

permit carrying the windows further forward than is usual. There is an extremely large deck-house, 20 feet long and 12 feet wide, which is used both as a living room and as a dining saloon and which has a dumb-waiter from the galley, and stairways leading to the quarters forward and to the after part of the saloon. There is a wide passageway on either side of the deck-house and in addition there is ample deck space forward and aft which is covered by awnings. The bridge is arranged on top of the deck-house to which point the rudder and motor controls are led, but there is also a steering gear arranged inside the deck-house for use in inclement weather.

In spite of the unusual height of this craft, it is stated that her wide beam makes her perfectly seaworthy. Lodona has four state-rooms below and two bath-rooms, and there are ample accommodations for the crew aft. There is also a short after deck for the use of the crew. The interior finish is in enamel.



Lodona is powered with two 6½ x 8½-inch 20th Century motors, giving a total of 120 h.p.

MoToR BOATING

From Readers

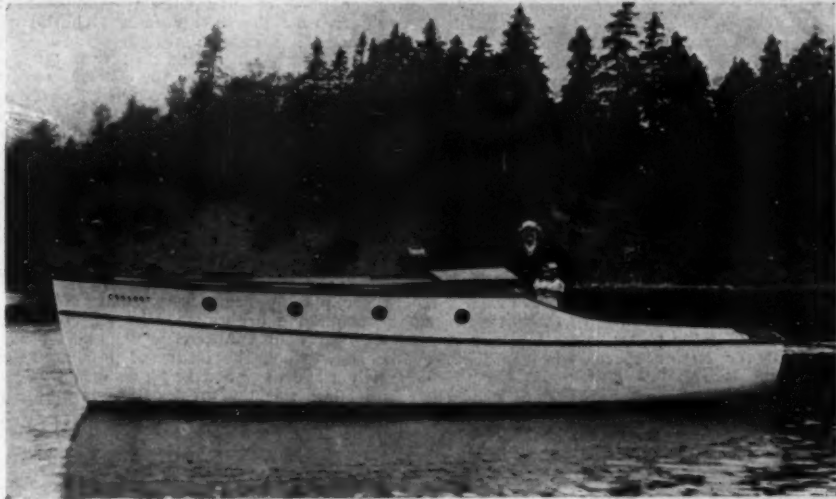
MoToR Boating's columns are open to its readers, not only for asking questions, but for placing before other readers ideas, results of experience, opinions, etc., that should be interesting or helpful to them; but the editor will not, of course, be responsible for any opinions expressed or statements made in such communications. The name and address of the writer must necessarily be given in every case and return postage enclosed to make an answer by mail possible (no anonymous contributions will be considered for publication), but names will be omitted in publishing the letters and answers where desired. Through the correspondence department readers of the magazine may be of direct aid to one another in solving the problems of motor boating.

Baltimore to Atlantic City

To the Editor of MoToR Boating:
I am desirous of making a trip by boat from this city to Atlantic City, N. J., some time next summer and would like to obtain information from you regarding this run. My boat is a 32x7x3-foot log canoe with stanchions and roof and canvas curtains. I would like to know first, the distance; second, the charge through the canal for a boat of the dimensions above stated; third, the best time in summer to make the trip; fourth, how far I would have to keep from shore going along the coast, and fifth, what my chances would be with a boat of this size. I have never made a trip of this kind before and would greatly appreciate any help you can give me.
J. F. D., Baltimore, Md.

If your boat is at all seaworthy, can make this trip any time during the summer months, provided caution is observed before going outside at Cape May. The distance between Baltimore and Atlantic City is about 161 nautical miles, while the outside run up from the Cape to your destination is only 35 nautical miles. It is not even necessary to make an outside run of this length, as Hereford Inlet, 9½ miles northeast of Cape May lighthouse, is navigable for boats having a draft of 5 feet, and the inland waters from this point up to Atlantic City can be easily negotiated by a boat of your dimensions. It is well to remember, however, that strangers attempting to enter any of the Jersey Coast inlets should do so on a flood tide with a smooth sea, while it would be wise to obtain in advance local information as to the location of the channel. In making the coastwise run, it will not be necessary to keep very far from shore, and a half-mile distance or even less may be kept from the line of breakers with perfect safety.

The charges made by the Chesapeake and Delaware Canal Company are subject to change, but they are not in any case excessive for a boat of your length. In making this run we would suggest that you have aboard your boat copies of the Inside Route Pilot from New York to Key West and for the Coast of New Jersey, which may be obtained for twenty cents each, while charts 125 and 124 will carry you down the Dela-



Consort, built by an amateur at Sydney, N. S., from plans and instructions published in MoToR Boating

ware River and Bay and up the coast for the short distance which it will be necessary to cover outside. These charts and Pilots may be obtained from the local agent in Baltimore—John E. Hand & Sons, 510 East Pratt street.

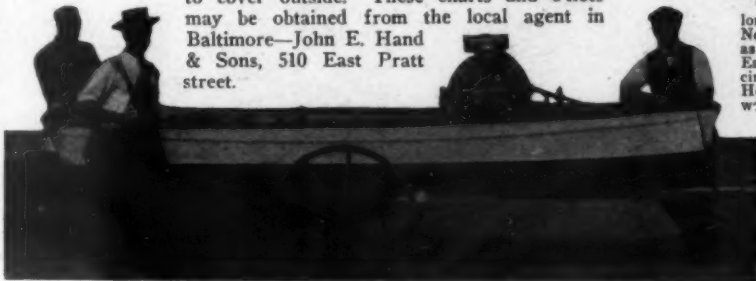
and ride down to the water's edge, detach the Motor Wheel from the bicycle and in a few moments attach it to a rowboat or skiff, making it a rowboat motor.

The photograph shows the outfit belonging to Captain H. L. Willoughby, Newport, R. I. Capt. Willoughby is, as you may know, well known in the East in amateur and professional marine circles and also as an aeroplane builder. He writes that the attachment pictured works most satisfactorily and gives excellent speed to a boat with 14 x 4 feet 8 inches displacement. Capt. Willoughby further advises that this is the first time that he knows of that an air-cooled motor has been used successfully on a boat.

The Motor Wheel as pictured is attached near the boat's bow and operates a propeller underneath the boat. There is quite a unique attaching frame which can be put on the boat in a few moments with a perfect clutch into which the Motor Wheel can be lifted. It takes but five minutes to attach a Motor Wheel to a bicycle, and Capt. Willoughby says that it takes less time to attach it to a boat.

It remained for Capt. Willoughby to put the Smith Motor Wheel to practical use as a rowboat motor, and it is quite possible that this new gasoline device will become popular during the next season.

A. O. S. Co., Milwaukee, Wis.



A rowboat fitted with a Smith Motor Wheel and ready for launching

A Novel Installation

To the Editor of MoToR Boating:
Enclosed please find a very interesting photograph together with the story concerning it:

The Smith Motor Wheel is a motor attachment for bicycles, and this is the first experiment made to adapt it to boating. The big feature about this adaptation is that one can attach the Smith to one's bicycle

to a bicycle, and Capt. Willoughby says that it takes less time to attach it to a boat.

It remained for Capt. Willoughby to put the Smith Motor Wheel to practical use as a rowboat motor, and it is quite possible that this new gasoline device will become popular during the next season.

A. O. S. Co., Milwaukee, Wis.

A Few Helpful Hints

To the Editor of MoToR Boating:

May I offer a few wrinkles, which if not new, may help the few boatmen who are operating in the cold weather, and cranking their heads off every morning to get their engines started.

I get from the drug store a pint of commercial ether (very cheap and less powerful than the anesthetic ether) and mix in the priming can from 50 per cent. to 75 per cent. ether with gasoline. This works like a charm and the engine goes off the first crack when primed with this mixture.

To keep the engine warm while running I have made a by-pass of the same size as the water overflow pipe, running from the overflow to the intake water pipe and connecting with the intake, between the sea-cock and the pump. At a convenient place in the by-pass I put a globe valve,

and by this means can control the amount of hot water flowing through the by-pass. Thus instead of the engine being supplied with cold sea water it is receiving a mixture of hot water from the overflow and the proper temperature of the engine can be regulated without the danger involved by shutting down the water by the sea-cock valve of not supplying enough water to keep the water jacket full.

For fenders I use old motor car tires and they are the best thing that one could imagine for the purpose, especially when covered with canvas.



Most of the Gloucester fishing craft these days are powered with gasoline motors. This particular boat made a round trip between Cape Cod Bay and the Pacific last summer under power

What is a Hydroplane?

To the Editor of MoToR BoatinG:

Whatever information you can supply the writer relative to the following subject will be greatly appreciated:

Carl Kline, the speed auto driver, who is associated with Anderson and a few more of the speed kings, says it is impossible for a propeller on a speed boat to operate more than 950 to 1,050 revolutions per minute and stay in the water, the suction being too great. Further that a hydroplane is not classified as a motor boat, he being under the impression that a hydroplane is a hydroaeroplane. The writer says that he is entirely wrong.

My best recollection is that the motors in boats such as the Baby Reliance class operate in the neighborhood of 1,500 to 1,800 r.p.m. and that on account of the propeller shaft running toward the bow and gear that the propeller itself will operate in the neighborhood of 2,000 to 2,200 r.p.m. I am, however, not at all positive as to the highest revolutions per minute that have been made to date.

In order that we may settle this argument, will you be kind enough to advise the names of owners and power plants of the four fastest hydroplanes and one of the fastest displacement boats, the number of r.p.m. the engine turns over and the r.p.m. per minute of the propeller when it goes at its best.

Also explain why the hydroplane is a motor boat and differs from the displacement boat.

C. C. M., Detroit, Mich.

You are absolutely right in your contention in regard to the speed of motors in the latest hydroplanes.

In such boats as Disturber IV, Miss Detroit, Baby Reliance V and Baby Speed Demon II, which were probably the four most successful boats of last season, the motors operated at speeds of approximately 1,500 r.p.m. The propeller shaft was geared up in a ratio of about 1 to 1½, which means that the propeller itself turned at speeds approximating 2,000 r.p.m. It seems probable that in some of the boats which are building at the present time for next season that the engine speeds of 1915 will be exceeded.

In regard to the names of owners of the above mentioned boats, they are as follows: Miss Detroit, The Miss Detroit Power Boat Association, Detroit, Mich.; Disturber IV,

James A. Pugh, Chicago, Ill.; Baby Speed Demon V, J. Stuart Blackton, Brooklyn, N. Y.; Baby Speed Demon II, Mrs. J. S. Blackton, Brooklyn, N. Y.

It is rather hard to give you the name of the fastest displacement boat, as there were no races held in which displacement boats from the different sections of the country were entered. It is true that there were sectional races for displacement boats, but the data is so incomplete, and as the races were not sanctioned by any governing body, we would not care to certify the results as being accurate. One of the fastest displacement boats is Sterling II, owned by M. C. Kimball, of Bruns, Kimball Co., New York City. This boat is powered with a 135 h.p. motor, which her owner claims gives her a speed of about 35 miles an hour.

As to the definition of a hydroplane, this is rather hard to give without going into the subject very thoroughly in a technical way. However, in a nutshell, a hydroplane is simply a boat which planes, that is, comes up and runs along the surface of the water to a greater or less extent, and not through the water as a displacement boat does. In other words, in a hydroplane the center of gravity of the boat actually rises when the boat is under way, while in a displacement boat the center of gravity does not rise. Of course, you understand that there is no clean-cut distinction between a displacement boat and a hydroplane. Even the so-called displacement boats which make speeds of 30 to 35 miles an hour plane very appreciably. It is a disputed question where planing begins, but in some types of boats planing begins at as low a speed as 20 miles an hour. A boat which simply raises her bow when she is at speed is not necessarily a hydroplane, it being necessary that the entire hull rise, that is, the stern as well as the bow.

The American Power Boat Association, which is the governing body of the sport in

this country in its races defines the hydroplane as follows:

"A hydroplane is a boat whose propeller acts in or against the water, and has one or more of the following characteristics:

"a—One or more breaks in the longitudinal continuity of the immersed surface or an under body having more than one lifting surface.

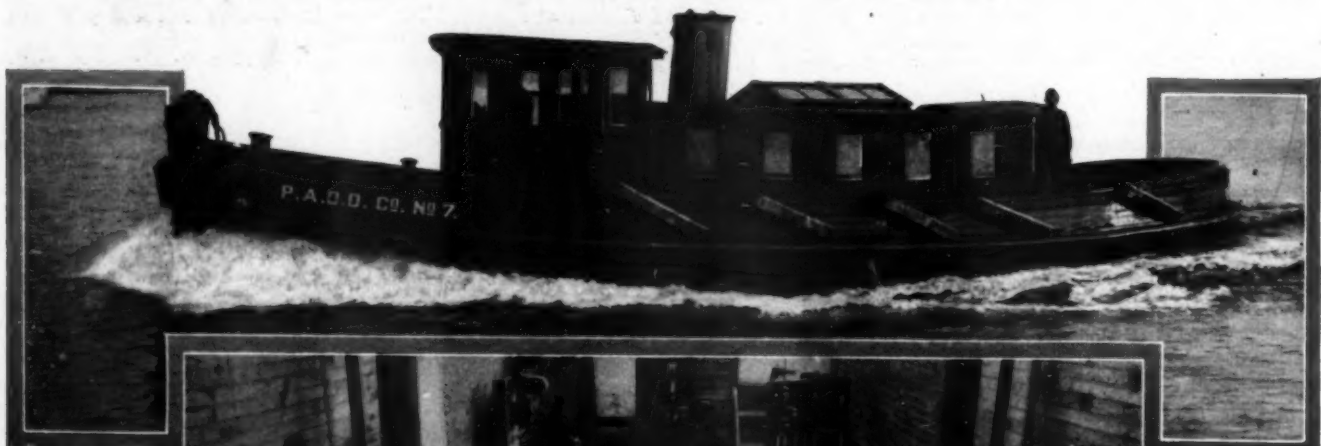
"b—An area of immersed transom exceeding 50 per cent. of the immersed midship section, or taken at 50 per cent. of the load water line."

Engine Slows Down

To the Editor of MoToR BoatinG:

Of late I have been having some little trouble with my gasoline engine, a 20 h.p. four-cylinder, two-cycle, three-port machine equipped with one set of spark plugs and a quadruple coil. When the engine is first started it runs along very nicely, but after having run for a short while begins to shake and knock slightly, growing worse all the time until the engine slows down and will not pick up at all. On stopping the engine and trying to turn the flywheel to see if the cylinders are stuck I find that the wheel turns as easily as can be, with no stiffness at all. The engine has good compression, and very little if any carbon in the cylinders. I have tried regulating the carburetor, but that has no effect at all. I have tried my spark set in several different positions and cannot find where the trouble is. I put a pint of lubricating oil in with five gallons of gasoline, use compression grease cups on the main bearings. There is a good rotary pump with three-quarters inch feed pipe and the pump throws a strong stream of water.

Your trouble, it appears to us, results from an insufficient supply of fuel at the carburetor. This may be due to a number of reasons, and you should not assume that because the gasoline flows freely when the fuel pipe is disconnected at the carburetor that the supply of gasoline is sufficient. It may be that it flows freely enough for a few moments, but if allowed to run for an appreciable length of time would gradually stop up, and flow in insufficient quantity to supply the motor after it has been running for a short time.



THE illustrations of tug No. 7 and her motor room show one of the most unique and original purposes to which a marine motor has ever been put. The main power plant of No. 7 consists of two 50-80 h.p. Buffalo motors, built by the Buffalo Gasoline Motor Co., of Buffalo, N. Y. These motors are of the cruiser and runabout type, and this installation represents one of the first in which a high speed engine has been installed in a tug boat. Each motor drives a 38 x 28-inch Hyde propeller,

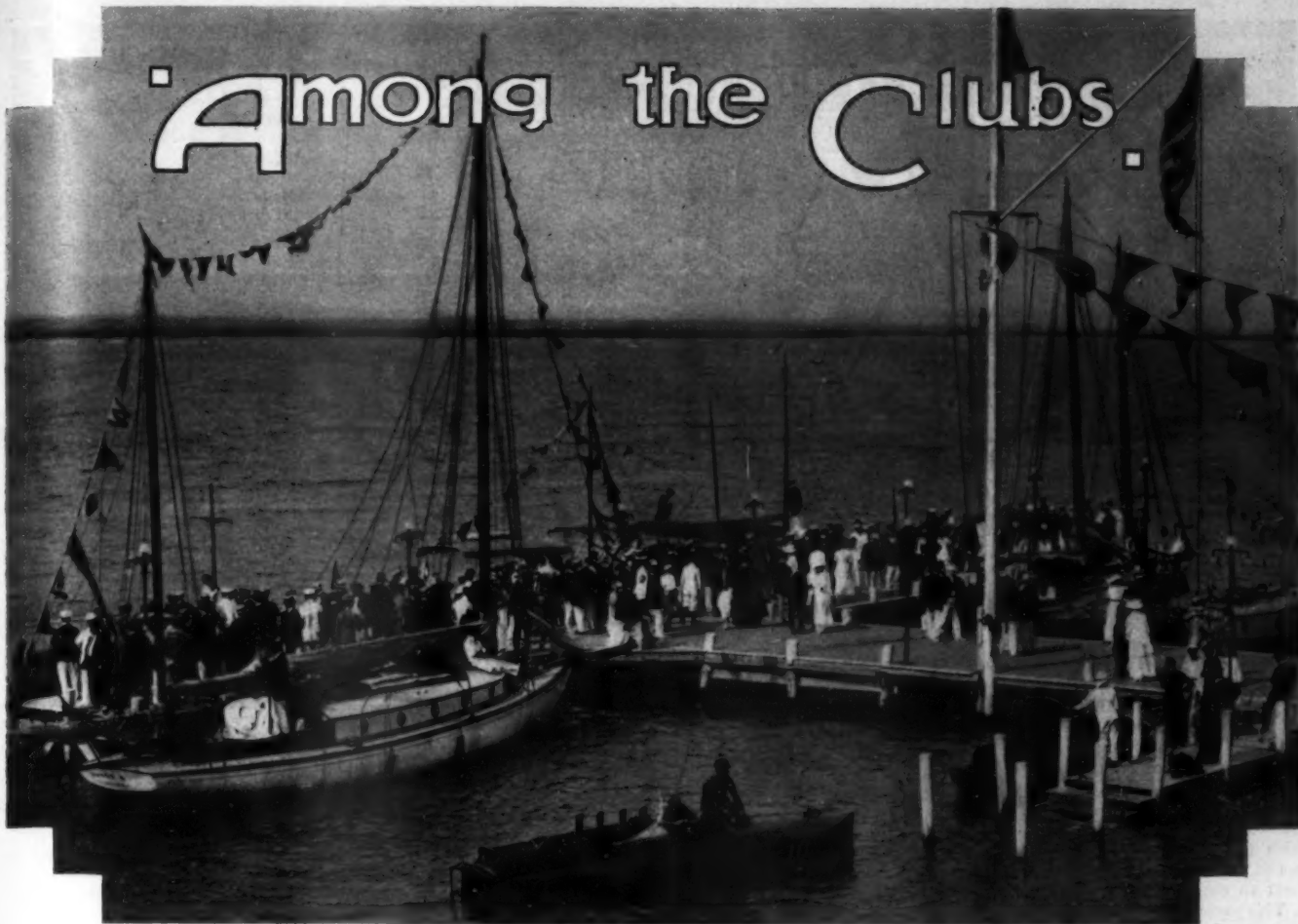


Motor room of tug No. 7 showing twin Buffalo motors used for stationary purposes and also for driving the boat. A maximum boat speed of 14 miles per hour is attained

which gives the tug a speed of 14 miles an hour when running light, and 8 miles an hour when towing a barge loaded with 300 tons of coal.

In addition to supplying the power to the tug, the motors are used as stationary power plants. The starboard engine, which rests on a cast iron sub-base, drives a direct connected electric welding generator at a speed of 800 r.p.m. The port motor is direct-connected to an air pressure pump by means of a friction clutch which operates at a speed of 125 revolutions per minute.

Among the Clubs



Pier at Ocean City Yacht Club during one of their motor boat regattas with Coleman du Pont's Tech, Jr., in the foreground

United States Power Squadrons Meet

At the annual meeting of the United States Power Squadrons held recently in New York City at which delegates from all local squadrons, with the exception of two, were present, plans were discussed for greatly amplifying the work of the squadrons and broadening its policy. The by-laws were amended so that the fundamental object of the Power Squadrons, that is to educate motor boatmen and make them better able to handle their own craft, will be more readily accomplished. In the past each local squadron which is a member of the United States Power Squadrons has been required to hold six drill periods during the year, but in the future this requirement will be reduced to three drill periods, and alternatives in lieu of drill periods will be allowed. Each local squadron will hold four instruction meetings during the year, at which qualified instructors will speak. These meetings will be arranged by the central organization and will be standard in form, so that the members of each local squadron, hereafter, will receive the benefit of experienced instructors.

In computing the members' record for the year participation at drill periods will count 25 points and attendance at instruction meetings will count 15 points each. A member to retain his membership in the squadron must maintain a standing of at least 70 points. Those members who cannot attend either the drill periods or the instruction meetings will be allowed to submit evidence of their experience in navigation during the year, which will be passed upon as a substitute in whole or in part for the other requirements. In this way a member who takes a cruise and keeps a log of same or performs other practical work upon the water will be allowed to retain his membership in the squadron if the evidence he submits shows that his experience is up to the standard required of squadron members.

A new form of membership was provided in the United States Power Squadrons, to be known as associate members. A man to become an associate member must be located in some territory where there is no local squadron or where membership in an existing local squadron is impossible. This member will be required to pass an advanced examination and will be assigned to some district squadron by the Governing Board of the United States Power Squadrons. These district squadrons will be formed for associate members as occasion demands. An associate member will not be required to attend drill periods or instruction meetings, but he will have to satisfy the committee on instruction and examination each year that he is capable of navigating a power boat. It is expected that this form of membership will greatly increase the membership of the United States Power Squadrons and will make membership in same open to many yachtsmen who heretofore have been barred because it was impossible to become a member of a local squadron or obtain the necessary minimum of ten boat-owning members in order to form a new local squadron. It was realized that in this country there are many thousand motor boatmen interested in the squadron movement who are excellent nav-

igators who desire admission to the squadrons, but could not join in the past on account of the requirements of the old by-laws. Now it will be possible for any yachtsman or motor boatman who can demonstrate that he is capable of handling his boat, even though he resides in the remotest section of the country, to join the United States Power Squadrons.

For those members of the squadrons who desire to take up more advanced work in navigation, both coastwise and deep sea, provision was made. A new title of junior navigator was established. This title will be awarded to those members who participate in a certain number of drill periods and pass an advanced examination in coastwise navigation. The title of navigator will be awarded to those members who do a certain amount of actual boating work and pass an examination in deep sea navigation. MoToR Boating will be pleased to give any of its readers any desired information about the squadrons.

Club Elections

Passaic River Yacht Club.

Commodore, Alvah W. Hoffman; Vice-Commodore, De Witt C. Pell; Recording Secretary, Paul Justinski; Financial Secretary, William Hedden; Treasurer, A. E. Warren; Board of Trustees, for three years, Frederick Stumpf, Edward L. Curtis and James Doughlin; Auditing Committee, A. E. Willington, Charles Patterson and George E. Sarles.

Motor Boat Club of Jamaica Bay, Inc.

Commodore, Louis Golly; Vice-Commodore, Joseph Yenzer; Rear Commodore, Charles H. Greene; Treasurer, Louis Benson; Financial Secretary, James T. Connell; Secretary, James A. Palmer.

Tamaqua Yacht Club.

Commodore, Harry E. Childs; Vice-Commodore, Edward A. Gartner; Rear Commodore, Elbert S. Knox; Recording Secretary, George W. Schultz; Financial Secretary, Walter H. Hume; Treasurer, George MacDonald; Governors, William E. Bond, E. Irving Bugg, John A. Filsner, Wm. T. Anderson, G. O. Parker, Joe Ford.

The Island City Boating Association.

Commodore, W. F. Bradley; Vice-Commodore, Martin Sutter; Rear Commodore, W. C. Totten; Secretary and Treasurer, Victor G. Kuensel; Trustees, H. V. Burt, H. Starr, H. Hunter, F. H. Burnett, C. Franks and James Hall.

Pilgrim Yacht Club.

Commodore, George E. Horton; Vice-Commodore, Frank Campbell; Rear Commodore, Edward Moore; Recording Secretary, Alfred Haner, Jr.; Financial Secretary, Arthur Nevins; Treasurer, Archibald Schields; Board of Trustees, F. Carlson, J. Byrnes, J. Johnson, H. L. Lane; Entertainment Committee, Newton Parker, Ernest Emig, Chas. T. Osterland;

Nominating Committee, Harry W. Thielemann, F. W. Hilpert; Regatta Committee, G. A. Davidson, Fred Bushey.

Chicago Motor Boat Club.

Commodore, Ralph Esau; Vice-Commodore, O. B. Carlisle; Rear Commodore, John Berg; Secretary, Geo. H. Baker; Treasurer, W. C. Anderson; Trustees, Geo. E. Reid, O. Stenstrom, W. W. Nugent, P. Kargard, W. S. Hock.

Stuyvesant Yacht Club.

Commodore, J. A. Muller; Vice-Commodore, F. H. Hegeler; Rear Commodore, Dr. H. Bruening; Recording Secretary, G. A. Gallowitz; Financial Secretary, W. L. Cree; Treasurer, C. S. Ogden; Measurer, C. H. Clapper; Fleet Surgeon, J. F. Nelson, M. D.; Fleet Chaplain, H. P. Fiske; Board of Directors, P. W. Hoenack, W. C. Cartwright, Geo. A. Liptay, J. Wylie, E. A. Allen; Regatta Committee, S. S. Ogden, H. P. Fiske, August Dippel, J. H. Jones, Edward Lanham; Law Committee, E. Hanley, W. A. Hansen; Auditing Committee, C. H. Clapper, H. Ludwig, H. Harper; Membership Committee, F. H. Barry, C. S. Ogden, J. H. Jones.

Westchester Motor Boat Club.

Commodore, Louis Megroz; Vice-Commodore, H. Schrader; Treasurer, Ed. Hehre; Secretary, Barney Nathan; Fleet Captain, Frank Hernecker; Fleet Surgeon, George Auer; Directors, Chas. Lambert, Geo. Auer, Leroy Watkins, A. Backer, H. Schrader, S. Frank Gregg.

Era Yacht Club.

Commodore, John Mahnen; Vice-Commodore, A. F. Carew; Rear Commodore, Sidney King; Rec. Secretary, A. S. Anderson; Financial Secretary, A. Doughty; Treasurer, F. J. Donovan; Trustees for three years, Silby Kinn, Wm. Crawford and Leroy Jones. For two years, W. Stewart.

Gravesend Bay Yacht Club.

Commodore, Thomas C. Cardwell; Vice-Commodore, H. A. Guilford; Rear Commodore, Geo. W. Roff; Secretary, Robert Birch; Treasurer, John T. Metcalf; Measurer, Chris. Myck.

Pensacola Yacht Club.

Commodore, F. H. Henning; Vice-Commodore, J. O. Walker; Rear Commodore, H. S. Merwin; Captain, Jas. C. Watson; Lieut. Chas. Ketchum; Secretary and Treasurer, W. C. Frederic.

Eureka Yacht Club.

Commodore, A. W. Kranich; Vice-Commodore, LeRoy Hunt; Rear Commodore, J. J. Cummings; Secretary, E. S. Hunt; Financial Secretary, Chas. Wold; Treasurer, H. H. Caruso; Trustees, C. J. Wadsworth, T. W. Lewis, W. Sherman Rauch.



Regal 50 H. P. Motor

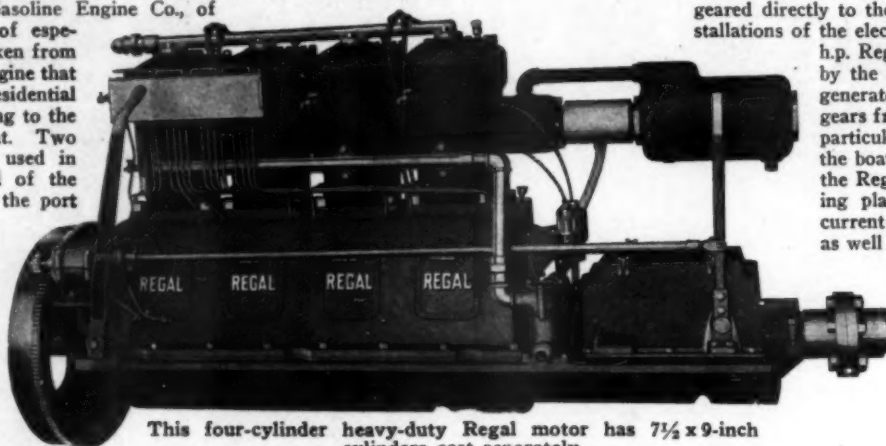
Heavy-Duty Motor in Twin-Screw Installation for Presidential Yacht of the Argentine Republic—Fitted with Self-Starter Obtaining Electric Current from Auxiliary Lighting Set

THE accompanying cut of the 50 h.p. heavy-duty Regal motor, manufactured by the Regal Gasoline Engine Co., of

Coldwater, Mich., is of especial interest, as it is taken from a photograph of the engine that is installed in the Presidential yacht Adhara, belonging to the Argentine Government. Two of these motors are used in Adhara, the manifold of the port engine being on the port side, and that of the starboard motor on the starboard side, with the control levers of the two engines next to each other.

This yacht is 68 feet long, and with the twin screw installation of these 50 h.p. motors is guaranteed

to have a speed of 13 m.p.h., but is expected to do better than this.



This four-cylinder heavy-duty Regal motor has $7\frac{1}{2}$ x 9-inch cylinders cast separately

There is an electric starting motor attached to the forward end of the crankcase and geared directly to the flywheel. Ordinary installations of the electric starting motor on 50 h.p. Regals are accompanied also by the equipment of an electric generator which is driven by spur gears from the camshaft. In this particular installation, however, the boat is equipped with one of the Regal direct-connected lighting plants, which provides the current for starting the motors as well as lighting the boat.

The 50 h.p. heavy-duty Regal has cylinders with $7\frac{1}{2}$ x 9-inch bore and stroke, and under test, has pulled 55 h.p. at 450 r.p.m. for a ten-hour stretch. The motor weighs 4,600 pounds.

The Overhead-Valve Erd

Four-Cylinder En Bloc Motor Which Greet the 1916 Season with Several Important Improvements—Spark Plugs Now Placed in Center of Head in Closest Proximity to Combustion Chamber

SEVERAL improvements have been effected in the 1916 model of the valve-in-head Erd motor, manufactured by the Erd Motor Co., of Saginaw, Mich. One of the most important of these is the placing of the spark plugs in the center of the head so that they fire close to the combustion chamber, while there have been other improvements which certainly seem to have increased the value of this motor for marine work.

The cylinders of this 25-40 h.p. engine are cast en bloc from a special metal of semi-steel. The block casting is accurately bored and reamed to limit gauges, and the combustion chamber is counter-bored to permit absolutely uniform compression in all cylinders. The cylinder head is removable, and is held to the cylinder by ten studs, a copper asbestos gasket being used at the joint. The eight valves are located in the cylinder head, and are thoroughly water-jacketed around the valve pockets. The exhaust mani-

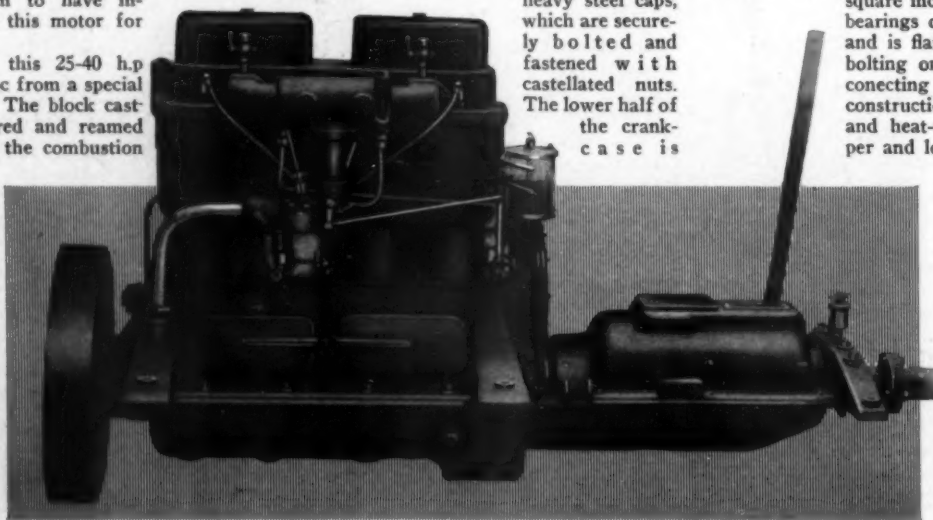
fold is cast integrally and water-jacketed, and the intake manifold is bolted on.

The crankcase is a strong, substantial casting provided with oil pockets over all bearings. Two large hand hole plates are located on each side to provide ample room for taking up the main and connecting rod bearings. The crankshaft is hung in the crankcase by three heavy steel caps, which are securely bolted and fastened with castellated nuts. The lower half of the crankcase is

made with liberal space to hold sufficient oil for lubricating, and this pan also carries the reverse gear.

The materials used in this motor are declared to be of the finest quality throughout. The crankshaft is made of special crankshaft steel, drop-forged and heat-treated and having a tensile strength of 100,000 pounds to the square inch. It has three main bearings of liberal dimensions, and is flanged on one end for bolting on the flywheel. The connecting rods are of I-beam construction, also drop-forged and heat-treated, and the upper and lower bearings are ac-

curately bored and reamed. The camshaft is a solid drop forging, and runs on three large bearings. The timing gears are of a special semi-steel with a helical cut. The rocker arms are located on the cylinder head and are drop-forged, machined and hardened. The push rods have an adjustment on top and a ball joint.



Port side of the 25-40 h.p. Erd valve-in-head motor, showing detachable head, valve cover, etc.

Mason Six-Cylinder Model G

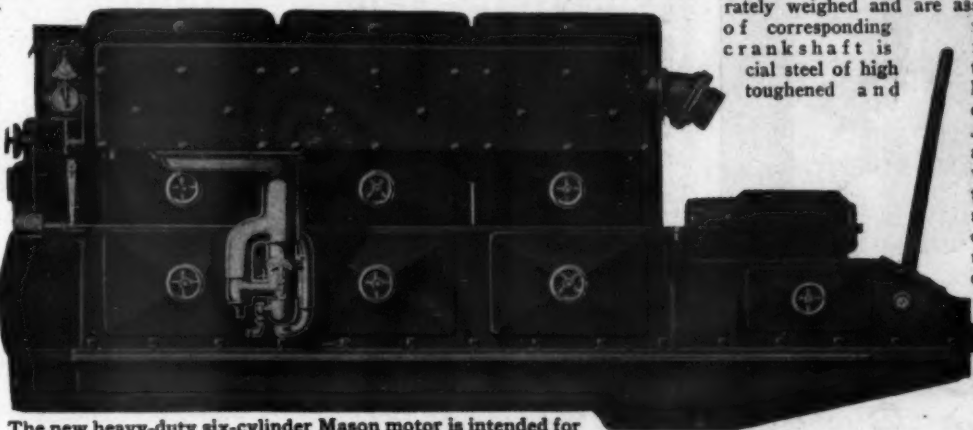
A New Heavy-Duty Motor Which is Also Made in Four Cylinders—Features of Design Include Enclosure of Moving Parts, Separable Cylinder Heads, Crankcase Accessibility, Etc.

THE Mason Machine Works, of Taunton, Mass., had a surprise for every one at the New York Show in its entirely new line of high-class marine engines. Not much had been said about them publicly before the show, but nearly every one agreed that they represented the most advanced ideas in marine engine construction. These motors were designed by W. S. Howard, who in the May, June and July, 1915, issues of MoToR Boating described his idea of an ideal marine motor, and this motor which he built up piece by piece for the benefit of our readers bears a very close resemblance to the four-cylinder Model B motor, now produced by the Mason Company.

The motor shown in the accompanying illustration is the six-cylinder type G, which has cylinder dimensions of 6½ x 9 inches, and which is designed for heavy-duty work. The cylinders are cast in blocks of two and the motor is also produced in four cylin-

ders, rating 90 h.p. at 800 r.p.m. This motor is described as being sturdy and accessible in every part. Large hand hole plates give access to the interior of the crankcase, making bearing adjustments a simple procedure, while the crank- and camshafts can be removed bodily through the forward hand hole plate. Every

The cylinder are cast from special cylinder iron and have separate heads. The pistons are of extra length of vanadium cast iron and are machined inside and out, annealed and finished to limit gauge by wet grinding, and are fitted with special expansion rings subjected to severe tests to insure perfect bearing in the cylinders. The pistons are accurately weighed and are assembled in groups of corresponding weight. The crankshaft is of special steel of high tensile strength, hardened with special heat treatment. A large flange for attaching the flywheel is forged integrally with the shaft. The crankcase is of cast iron, unusually rigid in construction and the gear case is cast in one piece with it. A separate covered case is provided for supplying the base with oil. The crankshaft is drilled



The new heavy-duty six-cylinder Mason motor is intended for yacht and commercial work, developing 130 h.p. at 800 r.p.m.

moving part is enclosed, and the electric starter is mounted on the reverse gear housing. Two Bosch magnetos are provided, and there is a ball type throttling governor fitted under a housing.

in order to insure perfect connecting rod bearing lubrication. The six-cylinder motor is rated at 130 h.p. at 800 revolutions per minute and is intended for service in yachts or commercial boats.

The Missouri Oil Engines

A Line of Four Motors Designed to Operate on Kerosene and the Heavier Oils—Elimination of Carbureter and Electrical Ignition Claimed as Strong Advantage of This Type

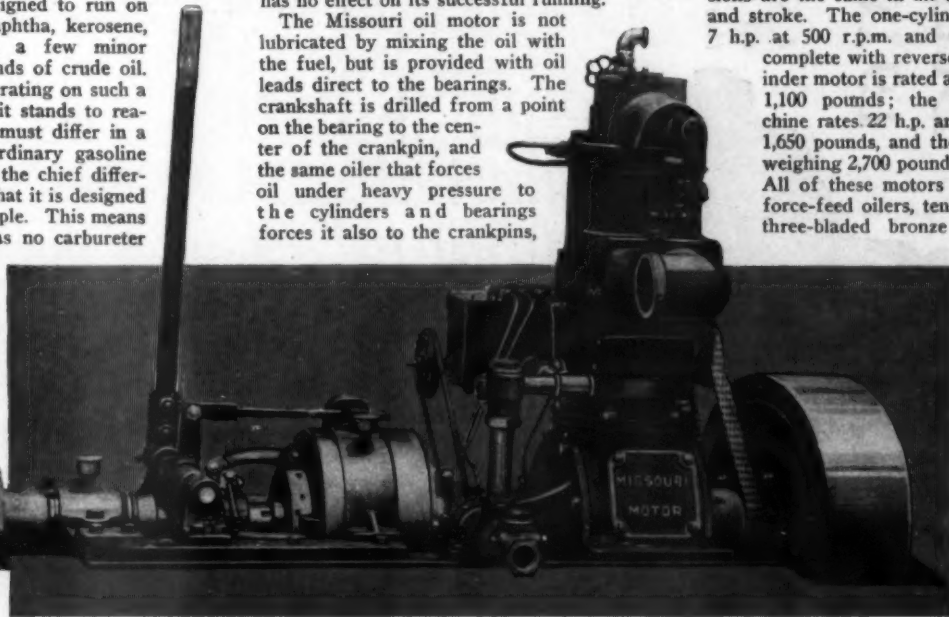
AT this time of high-priced gasoline a study of the Missouri oil engine, made by the Missouri Engine Co., of St. Louis, is particularly interesting. This motor which is made in one, two, three and four-cylinders is designed to run on gasoline, benzine, naphtha, kerosene, fuel oil, and with a few minor changes, on most kinds of crude oil. To be capable of operating on such a wide range of fuel, it stands to reason that this motor must differ in a radical way from ordinary gasoline marine engines, and the chief difference lies in the fact that it is designed on the hot bulb principle. This means that the Missouri has no carbureter and no electrical ignition system, the oil being forced into the cylinder in a liquid state and vaporized on coming in contact with the super-heated head, expanding clear to the end of the stroke. Of course, this motor cannot be started by a mere turn of the flywheel, but is put into operation by directing the flame from the hot torch

against the quick starting tube, a procedure which takes, it is said, only two to four minutes. It is claimed as a great advantage that this motor will start under the most adverse conditions of weather and that rain or spray has no effect on its successful running.

The Missouri oil motor is not lubricated by mixing the oil with the fuel, but is provided with oil leads direct to the bearings. The crankshaft is drilled from a point on the bearing to the center of the crankpin, and the same oiler that forces oil under heavy pressure to the cylinders and bearings forces it also to the crankpins,

thus eliminating any chance of connecting rod bearings burning out through lack of lubrication.

These motors are made, as has been stated above, in four sizes, but the cylinder dimensions are the same in all cases, 5x6-inch bore and stroke. The one-cylinder motor develops 7 h.p. at 500 r.p.m. and weighs 675 pounds complete with reverse gear; the two-cylinder motor is rated at 14 h.p. and weighs 1,100 pounds; the three-cylinder machine rates 22 h.p. and tips the scales at 1,650 pounds, and the four-cylinder job, weighing 2,700 pounds, is listed at 30 h.p. All of these motors are furnished with force-feed oilers, ten feet of steel shaft, three-bladed bronze propellers, water



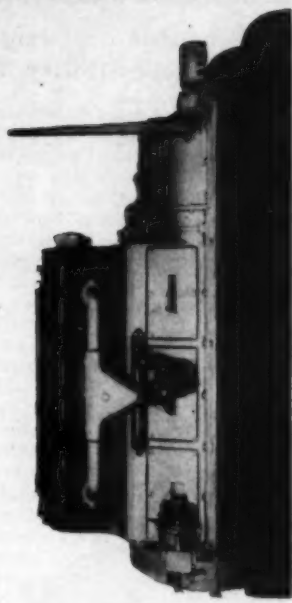
The one-cylinder Missouri oil engine with 5 x 6-inch cylinders develops 7 h.p. at 400 r.p.m. This motor is also made in two, three and four cylinders

connections, Paragon reverse gears, and torches. The two larger sizes are also equipped with an air starter.

In addition to elimination of starting troubles several other advantages are claimed for the Missouri oil motor. Among these are flexibility, durability and fuel economy.

Detail Specifications of 1916 Marine Motors

A Complete Record of the Specifications of
all Marine Motors Which Were Exhibited at
the New York Motor Boat Show, January 29
to February 5, 1916



The new twelve-cylinder Van Blerck motor, which is guaranteed to develop 275 h.p. at 1,000 r.p.m., 425 at 1,500 and 600 h.p. at 2,100 r.p.m.

THE accompanying tables show more forcefully and graphically than a written description could hope to do the principal specifications of all the marine motors which were exhibited on the floor of the Grand Central Palace in the recent motor boat show. Not only do they make clear at a glance the characteristic details of the individual motors, but they offer a ready comparison, as the leading models of practically all the prominent marine engine manufacturers were shown. No attempt was made to obtain information concerning engines which were installed in boats, as it was considered that these were exhibited only incidentally.

An explanation of the initials and symbols is given at the bottom of the next page, but it may be said further that in the years which have elapsed since MoToR Boating® first ran its annual table of show specifications a between-the-line meaning has been evolved in certain cases. Thus, in the old days "Batt. only" was taken to mean that the motor was equipped merely to operate on dry cells, while this year, in the four-cycle line at any rate, it generally conveys the idea that the motor is operated by a storage battery used in conjunction with a self-starting system. We find this year the electric starter working its way more than ever into popular favor, and there are no less than 24 motors

equipped with this important apparatus. More than half of these were of the Leece-Neville make, the product of a company which was one of the pioneers in the marine line, but the Bosch type was also well represented.

up-to-date models, and while the electric self-starter has not yet been added to this type of motor, we saw at the show at least one machine which was equipped with a reliable mechanical starter designed to eliminate any danger of back-kick. Another manufacturer exhibited for the first time in any show a four-cycle outboard motor which weighs only 95 pounds and develops 4 h.p.

+ n.p. Taking it all in all, the subjoined specifications bear out very fully the statement made in another article in this issue that the year 1916 brings with it the most pronounced advance yet achieved in marine engine design.

Two-Cycle

[illegible]

Four-Cycle

[illegible]

Explanation of initials and symbols: S. I. S. = single jump spark; M. & B. = make and break, 12. 1. and 2. means outboard motor; * means centrifugal pump; † means outboard pump; R. = rotary, gear or centrifugal pump; P. = plunger pump; H. & S. = valves in head and side; H. & S. = valves in head and side; H. & S. = valves in head and side.

New Things For MOTOR Boatmen

Ever-Tight Piston Rings

These rings are made by the Ever-Tight Piston Ring Co., of 1424 Chestnut St., St. Louis, Mo., and are carried in stock in all sizes from $\frac{1}{4}$ - to 6-inch diameter. The Ever-Tight consists of three separate parts made to a perfect roundness. The interlock combines the three parts into one ring, and is designed with a right angle or so-called square seat. It is impossible for the three joints to meet and this means that oil is kept from working up into the combustion chamber, while the compression is similarly prevented from leaking past the piston, thus tending to reduce the formation of carbon deposits and increase the power of the motor. This ring is stated to possess great flexibility, thus reducing the friction against the cylinder walls to a minimum while shaping itself exactly to the face of the walls.

Prest-O-Lite Storage Battery

The Prest-O-Lite Co., Inc., of Indianapolis, Ind., is manufacturing a storage battery which is declared to possess marked and unusual efficiency. It is designed to give a high rate of discharge for long periods, to maintain its voltage better than any other battery of relative size. As shown in the illustration, the Prest-O-Lite is compactly constructed with the terminals well protected. It is made in all sizes, and for every voltage and capacity for all starting and lighting systems in general use.

Weston Precision Instruments

The Weston Electrical Instrument Co., of Waverly Park, Newark, N. J., has a new line of miniature precision direct current instruments consisting of switchboard and portable ammeters, millimeters, voltmeters, milli-voltmeters and volt-ammeters. These are designed expressly to meet the requirements of current and voltage measurements on circuits in which relatively small amounts of electrical energy are employed, and in which it is desirable or necessary to use compact and inexpensive, but accurate, thoroughly durable and reliable instruments. The voltmeter shown in the accompanying illustration is designed for use on motor boats and small yachts, and is constructed to withstand the most severe vibration incidental to such uses. The ammeters of the same type match the voltmeters in size, finish and appearance, and the instruments are declared to be perfectly dead beat and to respond quickly and accurately to changes in current strength or voltage.

The New Michigan Reverse

A new reverse gear, which has already met with considerable favor, is being brought out by the Michigan Wheel Co., of Grand Rapids, Mich. On a forward drive this gear works through a multiple disc clutch which has an ample amount of friction surface. The discs are made of hard steel and bronze plates ground smoothly and set in pairs alternately. Each friction disc is cut with spur teeth so as to interlock in the spur sleeve gear and internal gear. These discs float in oil and have great holding power and take hold quickly or slowly, as desired. With the lever in the reverse motion, the breaker-band clamps the drum and causes the power to be transmitted to the propeller in the reverse direction, through four pinions of forty per cent. carbon steel gears heavily bronze-bushed and supported at both ends. Each of these four gears has three contact points on the driving shaft and three on the internal gear, making twenty-four points. The internal gear has a cylindrical bearing in the drum and is securely fastened to the propeller shaft.

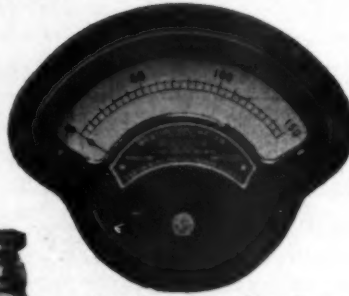
Summing up, the principal advantages of the new Michigan gear are direct drive on full speed ahead and on the reverse; direct line pressure on the go-ahead frictional clutch, meaning increased power; direct line pressure centrally located on the reverse mechanism, eliminating cramping or binding, and direct adjustment on both the reverse band and the frictional clutch while the motor is running or idle.

Valco Giant Plugs

These plugs are manufactured by the V. A. Longaker Co., of Indianapolis, Ind., and are constructed of the highest grade of material throughout. The porcelain is turned from specially selected imported clays, and is declared to have a toughness and resistance unequalled by any substance of equal insulating power. The shell is of a heavy-



Section of the Ever-Tight piston ring showing method of construction



One of the Weston precision voltmeters



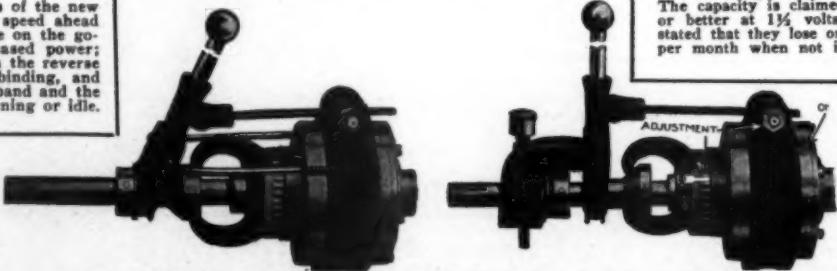
Valco Giant spark plug



Prest-O-Lite storage battery



The new two-cylinder Evinrude inboard motor showing method of installation



The new direct drive Michigan reverse gear with the cover removed, showing method of adjustment

duty over-sized type finished in highly polished nickel, and the center stems of crucible steel reinforce the electrodes almost down to the firing point, while the electrodes themselves are turned from a special alloy which is declared to have the greatest possible resistance to heat. The plug is assembled in such a way that the electrode and center stem ride free in the porcelain, being held in place against soft washers and spring washers which are designed to take care of expansion and contraction without danger of tearing away the cement or breaking the porcelain. Valco Giant Plugs are guaranteed for five years and are sold for \$1 each, and the Valco, Jr., is priced at seventy-five cents.

Schug Lighting Systems

The Schug Electric Mfg. Co., of Detroit, Mich., manufactures a number of types of electric sets for lighting houses, motor yachts, etc. The typical Schug system consists of a charging dynamo operated by a gasoline engine, a storage battery, a switchboard and a field rheostat, and the apparatus is simple and compact. Electricity for lighting is supplied from a storage battery, but if an unusual supply is wanted at any time the dynamo is used instead of, or in addition to, the battery. The switchboard is equipped with an ammeter and voltmeter, an automatic cut-out, lighting switches, etc. All Schug apparatus are of the best material, the switchboards being of enamel plate and the batteries of highest grade throughout. The generators are shunt-wound and are tested at the factory at twice their working voltage. The switchboard shown in the illustration is No. C-51 and is intended for use on motor cruisers in connection with small generators and batteries like No. 41 and 25-B-2. The No. 41 generator has a capacity of 5 amperes and is used for charging a 6-volt battery. The 25-B-2 is rated at 150-ampere hours, and is intended for lighting and starting.

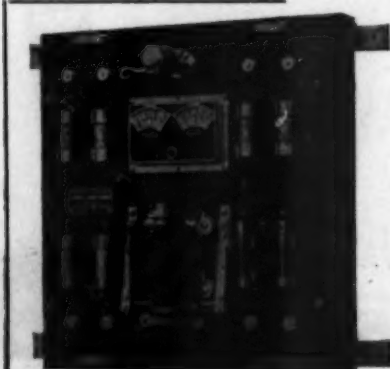
The Hartford Clock

This self-winding electric clock manufactured by the Hartford Clock Co., of Hartford, Conn., has a seven-jeweled compensated movement designed to meet severe conditions and is declared to be practically immune to the effects of vibration, heat, cold and shocks. The clock operates on two dry cells and the power is supplied through the medium of a long and very flexible coil spring which is adjusted to give the balance wheel the proper beat, and being replenished electrically each minute, causes a constant spring tension, thereby effecting a minimum of wear. There is no metallic connection between the clock movement and the case, as an inside case of hard rubber composition completely surrounds the movement, absorbing all direct vibration. The clock is sold in two models—the flush inset and the extended, and the price is \$10. Although the entire space on the instrument board occupied by the flush model clock is only a 3 1/4-inch circle, the dial is stated to be amply large enough to be distinguishable in a very faint light.

Hy-watt Battery

After several years of investigation and experimentation, the Hy-watt Battery & Electric Co., of 1074 East 66th St., Cleveland, O., is putting on the market a new battery of dry cell construction, which is declared to be absolutely water-proof. These dry cell batteries, it is said, have been soaked for days entirely submerged in water without suffering the slightest damage. The batteries have other features besides the water-proof quality, however. They are put up in a strong, compact metal container in two to eight cells connected in series. The capacity is claimed to be 60 amperes or better at 1 1/2 volts, and it is further stated that they lose only about 1/4 ampere per month when not in use.

Irrespective of the number of cells in each individual battery there are only two binding posts, which are plainly marked positive and negative so that there can be no confusion in connecting them with the ignition sys-



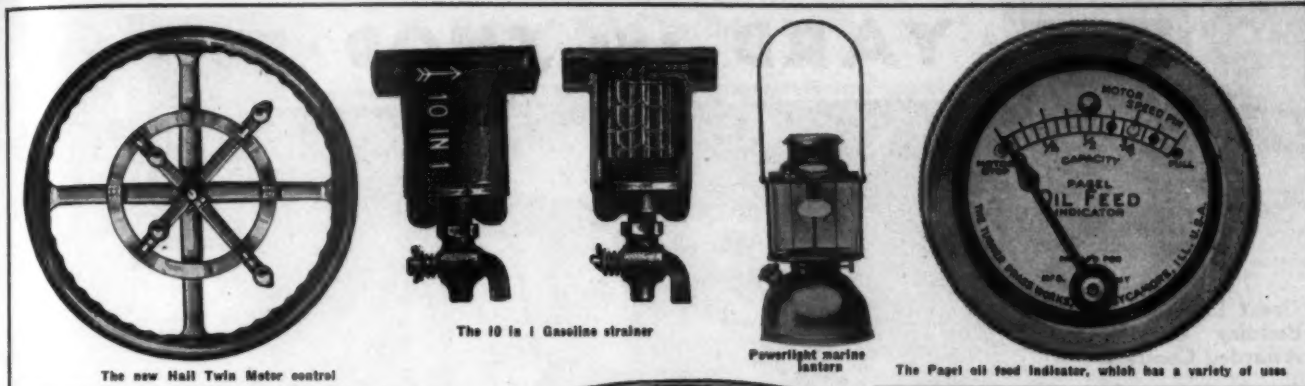
No. C-51 Schug switchboard



The Hartford electric clock, which retails for \$10



Hy-watt dry cell battery for which many advantages are claimed



The new Hall Twin Motor control

The 10 in 1 Gasoline strainer

Powerlight marine lantern

The Pagel oil feed indicator, which has a variety of uses

tem. The Hy-watt battery, which is shown in the accompanying illustration, retails at fifty cents per cell.

Evinrude Inboard Motor

The demand for a light motor capable of developing a good speed and embodying the qualities of simplicity and reliability has caused the Evinrude Motor Co., of Milwaukee, Wis., to produce the Evinrude inboard motor for permanent installation in launches, canoes and rowboats. This motor is built in two models—single and double-cylinder—and is furnished for fresh or salt water use. The bore and stroke is $2\frac{1}{4} \times 2\frac{1}{2}$, and the motor proper in so far as the cylinder size, piston, magneto, etc., is concerned is almost identically the same as the outboard motor. It is declared that when fitted to an 18-foot sponson canoe or other light hull, the two-cylinder motor will develop a speed of from 12 to 13 m.p.h. It is stated that by bolting the engine foundation firmly to each canoe rib absolute stability is assured. The two-cylinder motor is illustrated on page 38 as installed in a light runabout.

Twin Motor Control

The W. S. Hall Co., of 17 Elm St., Rochester, N. Y., has just brought out a new control for use with high-speed cruisers and runabouts using two motors. This apparatus, shown in the accompanying illustration, is equipped with a twenty-inch mahogany steering wheel with brass inserted spider. There are two levers on one side of the circle which operate the spark and throttle of one engine, and the levers on the opposite side control the other. All parts are made amply strong to operate in high-speed cruisers of the twin-screw type up to 100 feet in length. The Twin Motor control is shown in the unit type embodying the reverse control of each motor.

10 in 1 Strainer

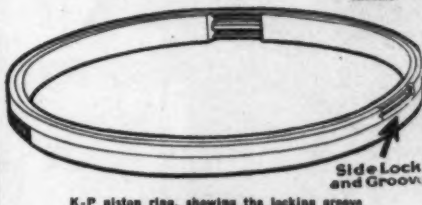
The 10 in 1 Strainer Co., Inc., of 628 Fourth Ave., Brooklyn, N. Y., has just brought out a non-clog gasoline strainer designed on correct scientific principles. The 10 in 1 has a ten-times larger straining surface than is usual for any given pipe size, thereby making it almost impossible for it to clog up. As the cut shows, the straining surface is built up in multi-fold cylinder shape mounted on the bottom of the water and dirt trap. This trap screws out like a spark plug or may be used as a drain cock for draining off the sediment. The fuel enters at the top and is spread all around the top of the multi-fold cylinder strainer, falling with greatly lessened speed between this and the walls of the trap and eventually passing out of the center of the strainer to the carburetor. Any sediment that has been separated in the trap remains settled until drained off and is not continually stirred up by the passing fuel. Style A, $\frac{1}{4}$ -inch and $\frac{1}{2}$ -inch, is mailed postpaid to any point in the United States for \$2.

K-P Piston Rings

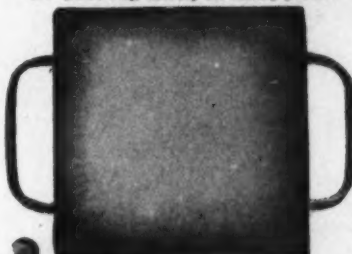
In order to meet the demand for a piston head ring which embraces all the mechanical principles essential to maximum compression, the Keys Piston Ring Co., Inc., of 3047 Olive St., St. Louis, Mo., is manufacturing the K-P ring. This ring is made in three pieces and all the joints are blocked when it is in position on the piston. The joint of the inner or bull ring is blocked by the two outer sections and in turn blocks the joints of the outer section, thus preventing leakage and the collection of carbon under the ring. The leading mechanical feature of the K-P ring is the groove between the two outer sections. This groove, which is designed to eliminate all the troubles of scored cylinders, consists of a side lock which holds down the ends and keeps them from turning up. This groove is also intended to prevent the pins from shearing and thus helps to retain the perfect roundness of the ring. Contact flexibility, continuity and mechanical accuracy are the principal points aimed for in the construction of this ring, which is made for all sizes of marine motors.

Ohio Tops and Cushions

The Ohio Top Co., of Cincinnati, O., carries a full line of auto type tops for runabouts and also makes a specialty of supplying new covers for old tops. These covers consist of roof-quarters, back stays and back curtain with celluloid light, sewed and finished complete, and ready to be drawn over the frame. The owner uses his old bows and pads and having furnished the Ohio Company with the correct dimensions is able to stretch the new roof-quarters and back on himself. Another popular item in this company's line is a life-preserver boat cushion, which is guaranteed to contain fine Java kapok and to support twenty pounds of direct downward gravitation in water for twenty-four hours. This cushion, which has been approved by the Government, is sold for \$1.25.



K-P piston ring, showing the locking groove



Boat cushion, sold by the Ohio Top Co.



Phantom view of the S. F. Sparten horn



Excelite searchlight, made by the Newfield Silver Mfg. Co.

The Kwikk Karbon Klenor

Yacht Furnishings

Henry Gray, of 26 Broad St., Boston, Mass., makes a specialty of designing and supplying the furnishings and appointments of motor yachts. Mr. Gray gives the closest personal attention to this work, going into every detail from the taking of first measurements to the final installation of the finishing. One phase of his business consists of designing and submitting preliminary sketches and estimates for completely furnishing yachts in any part of the United States, or single pieces of plain or upholstered furniture, mattresses, cushions or draperies will be supplied on short notice. Among the more important motor yachts which have been fitted out by Mr. Gray are the 90-foot Navigator, designed by Swasey, Raymond & Page, and the 86-foot Remik III, from the board of the same designers.

Spartan Signals for 1916

Several improvements and refinements have been made in the 1916 models of the Spartan Safety Signal line made by the Sparks-Withington Co., of Jackson, Mich. All the new models adjust by means of a knurled screw; adjustment is made without taking the signal apart in any way; no special wrenches are needed, while the commutator has been arranged for easy access. Four motor-driven and three-hand operating signals are offered for this season, and the prices range from \$6.50 to \$15, and \$4 to \$7 for the respective types. All wearing parts of Spartan signals are hardened and every instrument is furnished with a positive guarantee.

The Powerlight Lantern

The Powerlight Mfg. Co., of 545 Broadway, New York City, is manufacturing an incandescent kerosene or gasoline lantern for use as a riding light or for general purposes aboard a motor boat. This lantern is wickless, using the vapor of kerosene or gasoline instead of the liquid oil itself. It is constructed with a chamber in the base into which air is forced under pressure and on turning a valve this air drives the fuel through a tube to the mantle, where it burns with a penetrating white light. The mantles are soft and inexpensive (ten cents each), and are declared to be almost indestructible. The lamp will burn even if upset or held upside down, and it is said that it cannot be made to explode. It is made in several sizes, the smallest, giving a light of 300 c. p., being sold for \$5, and the largest with 500 c. p., for \$10. Powerlight lamps for cabin use are also manufactured by this concern.

Pagel Oil Feed Indicator

The Turner Brass Works, of Sycamore, Ill., is manufacturing an oil feed indicator for use with marine engines having a circulating lubricating system. This indicator is mounted on the bulkhead and in addition to showing circulation of the oil combines the functions of stopping the motor if the lubricant ceases to circulate and checking excessive speed of the motor. The indicator on the dial always rests against the pin marked "motor stop" when there is no oil circulation, short-circuiting the magneto, as the ground wire is connected to the dial. Regulation of speed is effected by the same principle; viz., that when the speed of the motor is sufficient to carry the indicator to the "speed pin" shown in the illustration, it checks the motor without stopping it. This pin can be set for any speed desired. With the Pagel indicator the oil does not come in contact with the glass. It circulates through a by-pass and the feed is plainly indicated by the hand on the dial. This indicator will not work in one- or two-cylinder motors or take the place of a mechanical oiler, but it is declared to be highly satisfactory for multi-cylinder motors using a circulating system. The price is \$2.25.

Excelite Electric Lamps

The Newfield Silver Mfg. Co., of State and Ash Sts., Bridgeport, Conn., is manufacturing a special swivel type searchlight for motor boat use. This lamp, which is furnished complete with bulb and eight feet of cable, may be operated from a generator or storage battery, and the current consumption is small, especially if a nitrogen bulb is used. The chief point claimed for the Excelite lamp is the accuracy of the polished reflector, which affords a concentrated pencil beam. Strength and rigidity are obtained by the heavy stamping and the substantial construction of all parts of the light. This searchlight, which is known as type C-4B is offered in 7-inch and 9-inch sizes, at \$6 and \$7.50, respectively—nitrogen bulbs being seventy-five cents extra.

Kwikk Karbon Klenor

This is a device manufactured by the Missouri Engine Co., of 2806 North Eleventh St., St. Louis, Mo., which is declared not only to remove the carbon already lodged in the cylinders of any motor, but to prevent the formation of any more. The Kwikk Karbon Klenor is so designed that a graduated stream of water adjusted to suit the size and style of any particular motor is directed into the intake pipe and thence into the cylinders and is dissociated into oxygen and hydrogen. In burning up, the hydrogen is stated to increase the power of the engine, while the oxygen, having an affinity for carbon, attacks and consumes it, and by combining with the surplus carbon in the incoming fuel prevents the formation of any more. This device is also declared to effect an economy in the consumption of fuel and increase the power of the motor from 10 to 25 per cent. It is sold complete for \$5.

Toppan Detachable Motor Boat

One of the latest innovations of the Toppan Boat Mfg. Co., of Boston, Mass., is a 15-foot detachable motor boat, which is designed to combine strength and easy lines for rowing. Fitted with a good detachable engine, it is declared that this boat makes about 8 m. p. h., and it can be depended upon in rough water, as it is made with a stern four feet wide and has also good bilge forward, which tends to throw off the water and keep it from coming aboard. The Toppan detachable boat is well built and extra timbers are used in its construction to make it immune to the effects of vibration. It is sold in plain painted finish for \$50, and with varnished seats, etc., for \$60. A special combination price with outboard motor is quoted.



YARD AND SHOP



Great Lakes Boat Building Corp. Awarded Contracts

The Great Lakes Boat Building Corp., of Milwaukee, Wis., through one of its subsidiary companies, has just been awarded a contract by the War Department for a 75 x 15 x 9-foot motor survey cruiser, to be known as Chicago, for the use on the Great Lakes of the U. S. Engineering Department, Chicago District. Chicago will be a heavily built cruiser of raised-deck type, with pilot house forward and deck-house aft, and will be propelled by a 100 h.p. heavy-duty gasoline engine located amidships. The crew's quarters, captain's and engineers' staterooms are located forward of the engine compartment, aft of which is the galley with cook's statement. Aft of the galley are two large staterooms, one equipped with extension berths and the other with built-in beds, for the use of the engineer officers.

The equipment of the boat includes air starter for the propelling engine, auxiliary electric set, power bilge pump, air compressor, arc searchlight and two tenders.

Chicago will be built at the Milwaukee works of the Great Lakes Company and will be delivered during July.

The Great Lakes Company now has under construction two of the military type express cruisers developed by the St. Louis Yacht & Boat Company, which has been absorbed by the Great Lakes Company. One of these is a 40-footer operating at 18 m.p.h. and the other a 48-footer operating at 21 m.p.h. Other boats now building are a 36-foot hunting cabin cruiser, with some special features for fishing and hunting service on the Gulf of Mexico; a 31-foot hunting cabin express cruiser; a 30-foot ten-passenger family runabout of the displacement type previously featured by the Milwaukee Yacht & Boat Company; and a 31-foot modified V-bottom express runabout with submerged cockpit forward for speeds of 30-32 m.p.h. The two last named boats are equipped with the divided, disappearing windshield, the patent covering which is owned by the Great Lakes Company, and with a one-man type folding top, leather upholstered cushions over springs, divided front seats and various other attractive runabout features developed largely by the Milwaukee Company.

Van Blerck Changes New York Office

The increase in the volume of business transacted



All ready for the launching

In addition to this Mr. Sparrow has two expert factory men at his command to send out to take care of Van Blerck owners on the Atlantic Coast. This office is now completely fitted up and all men interested in motor boating are cordially invited to call, as every courtesy will be extended.

Thos. B. Taylor, one of the best known motor boat enthusiasts, who has been a director in the Van Blerck Company since October last, has recently been elected second vice-president, and he is the resident Eastern executive of the company with offices at the same address.

In addition to the changes made in the New York office and its force, the Van Blerck Company has recently opened a Washington office in charge of Horace Ward. It is stated that the rapid increase in the volume of business placed by the United States Government with the Van Blerck Motor Company has caused this action.

Ampco Decides to Increase

At the annual meeting of the stockholders of the American Metal Products Co., of Milwaukee, Wis., the old Board of Directors was re-elected, the same being constituted as follows: Peter J. Weber, president; Henry C. Brelie, vice-president; Wm. J. Eberle, secretary and treasurer; Richard Gaertner, manager, and Charles E. Helm and August Littman.

The officers reported that although the present plant was being worked to full capacity it was impossible to keep up with the demand, that orders on hand were plentiful and that the many large orders pending absolutely necessitated the immediate installation of additional facilities.

The action of the Board of Directors in securing a larger plant and purchasing additional equipment to take care of the constantly growing demand for "Ampco" bronze was unanimously approved and many of the stockholders present purchased additional stock at the meeting.

New Automatic Model

The Automatic Machine Co., of Bridgeport, Conn., maker of the well-known Automatic heavy-duty engine, has recently brought out a new model, designed and built especially for the yachting trade. This new type of engine is built with four or six cylinders, in sizes ranging from 30 to 150 h.p., the bore and stroke of the smallest being 5 x 7 inches, while that of the largest is 8 1/2 x 10 inches. As in former Automatics, the cylinders are of the L type, and are separate and independent. All bearings are long and are made of special bronze, and are so constructed as to be removable. The valves—both inlet and exhaust—are large and are operated mechanically. They may be inspected or taken out without disturbing the cylinder heads in any way. Special attention has



through the New York office of the Van Blerck Motor Co., of Monroe, Mich., has made it necessary for it to take much larger quarters. In considering where to locate its new Eastern headquarters the company took into consideration the fact that primarily this office is a service station; consequently the handier it was the larger railroad terminals the more efficiently and quickly could Van Blerck owners be supplied with expert service men. Therefore, the Van Blerck Company has leased a large suite of offices in the Transit Building, 7 East Forty-second St., New York, and moved into them on January 22. These offices make it possible to carry a stock of engines, a stock of parts and to considerably increase the service force. A recent important addition to this force is Leslie Huxtable, who will assist the manager, H. L. Sparrow, in carrying out the Van Blerck idea of service.



The big Van Blerck Motor Co. plant at Monroe, Mich., with a detailed view of the new work of construction. So tremendous, it is said, has been the increase in domestic business of this company that it became necessary to more than double the floor space

been given to the oiling system, and as a result it has been built right into the engine and is entirely enclosed. Before putting this new model on the market the company states that it was tested in every possible way in the shop and in actual service under conditions that were exceptional because of their severity.

A Unique Installation

Marold, the 100-foot express cruiser designed by J. H. Wells and built by the Matthews Boat Co., of Port Clinton, Wills, of the Ford has been one of the most spectacular boats ever built and it is of special interest to know that Mr. Wills arranged with the Van Blerck Motor Co. at the New York Show to replace his present power plant of three eight-cylinder motors with that of four V-type twin six Van Blerck 400 h.p. motors, the motors being arranged in tandem, driving into a gear box in the middle, thus allowing the four engines to operate two propellers and delivering 1,600 h.p. to those propellers. The third propeller now in the boat will be taken out altogether. The engines will be shipped to the Matthews Boat Co. and the installation made by them, and it is fully expected that at least 35 miles per hour will now be obtained from this boat, which will make her the fastest cruiser in the world of her size operated by gasoline engines. The cash consideration in this transaction is probably one of the biggest in the history of the industry as applying to one boat, and it is a distinct compliment to Joe Van Blerck that Mr. Wills, who is himself an engineer of world-wide reputation, should place the confidence that he has in Mr. Van Blerck's ability to design and build an efficient power plant to develop such tremendous power.

It has been announced that several other important installations of these motors are being made.

Outboard Motors in Out-of-the-Way Places

Far out in the Atlantic Ocean, forty miles off the Hebrides or Western Isles of Scotland, more than forty miles from North Uist, lies the small island of St. Kilda. This island is covered with myriads of seafoam, and a population of human beings scarcely more than one hundred. It is farther out in the Atlantic Ocean than any other island off the Scotch coast. As a matter of fact

out-of-the-way place. However, we learn that W. & S. Pollock & Co., Glasgow, Scotland, have recently sold a Ferro rowboat motor to the leading citizen of this island.

The 32-Foot Niagara Runabout

One of the many handsome runabouts turned out by the Niagara Motor Boat Co., of North Tonawanda, N. Y., is shown in the accompanying illustrations. This boat which is built of the finest materials throughout has a beam of 5 feet 6 inches and a passenger-carrying capacity for six or seven persons. The frame is entirely of white oak and the planking of hand-selected white cedar, fastened with brass screws. The finest Honduras mahogany is used for the decks, covering board, coaming and all interior trim. Four coats of the best yacht enamel give a beautiful finish to the topsides, while below the waterline three coats of anti-fouling green copper paint protect the hull. A feature of this boat, which is offered as a stock model, is the centralized control. The helmsman sits at his wheel as if he were in the most expensive motor car with reverse and go-ahead pedals under his feet, spark and throttle levers on the spider, electric starter button on the control board, and various gauges and instruments under his constant supervision. The motor is installed under hinged hatches forward.



A view of the handsome 32-foot Niagara runabout in action, and a "close-up" of the control arrangements

it is a lonely rock and receives services from the mainland only four times a year. The mails at St. Kilda are generally put in a wooden box and thrown in the sea and left to drift with the tide to the mainland. This island is so far from the influence of civilization that money is very little used, the bartering system still prevailing. The growth of the popularity of rowboat motors has been rapid, but one would scarcely expect to find them in this

The Small Aristocrat

This little motor, manufactured by the Herrmann Engineering Co., of Detroit, Mich., is declared to have met with unprecedented success, especially since the announcement of the improved 1916 model. This is a 12 h.p. machine with four en bloc cylinders and the reverse gear mounted on an extension of



The shops, yards, dock, yacht basin, marine railway, boat-house and locker house of the Great Lakes Boat Building Corporation, of Milwaukee, Wis. The recent merger of the Saint Louis Yacht & Boat Co., and the Milwaukee Yacht & Boat Co., has made this concern one of the largest boat-building plants in the country. The shop building is of hollow tile and steel construction, and has 20,000 square feet of well-lighted floor space with every modern facility for the building of strictly high-grade pleasure boats, for which a well-rounded staff of experienced men has been assembled



BhapE, a trim little runabout, which was caught out in a blow last summer, and couldn't make up her mind for a while whether to live through it or not. Her Ferro motor aided in the decision, however, and her owner is now as happy as ever

the base. The motor is listed to sell at \$50, an extra charge of \$10 being made for a rear starter.

type, another view of which is shown in the lower left-hand corner. The circular picture in the center

A Letter to Uncle Sam

As of interest to boat and engine manufacturers and owners alike, a recent communication of the legislative board of the National Association of Engine & Boat Mfrs., is herewith printed:

"Hon. James P. Clarke, Chairman, Committee on Commerce, U. S. Senate, Washington, D. C.:

"Honorable Sir:

"In reference to Senate Bill No. 1315, introduced by Hon. Knute Nelson, of Minnesota, and Senate Bill No. 2226, introduced by Hon. Atlee Pomerene, of Ohio, which bills we understand are now before your committee, we desire to say that at a meeting held in New York City, on Friday, January 28, 1916, at the Engineers' Club, there were present the Executive Committee of the National Association of Engine & Boat Manufacturers, the President of the American Power Boat Association and the representatives of the following motor boat and yachting publications: Motor Boat, Motor Boating, Yachting, Power Boating, Pacific Motor Boat, The Rudder, and International Marine Engineering.

"It was unanimously decided that there were a number of provisions in these various bills, as above enumerated, that were deemed objectionable and harmful to the industry and to boat owners.

"It was decided, therefore, to request a hearing on these bills before your committee at some convenient time, and a committee representing those present was appointed, consisting of the Legislative Committee of the National Association of Engine & Boat Manufacturers, the President of the American Power Boat Association and three members of the marine trade press, namely, George S. MacDonald, representing the magazine Motor Boat; Charles F. Chapman, representing the magazine Motor Boating; and Thomas F. Day, representing the magazine The Rudder.

"We therefore respectfully ask that you fix a date at which time this committee may appear before you and state the objections to the bills as now framed.

"Respectfully yours,

(Signed) GEO. F. LAWLEY,
Chairman, Committee on Legislation,
National Association of Engine & Boat Mfrs."

A similar letter having to do with H. R. Bills 5795, 6801, 9411 and 9412 was addressed to the Committee on the Merchant Marine and Fisheries. As these bills may have a vital effect on the marine industry the disposition of Mr. Lawley's request will be awaited with considerable interest.

A Group of Great Lakes Views

The accompanying group picture shows interior views of the shops and offices of the Great Lakes Boat Building Corp., at Milwaukee, with several well-known boats built by the corporation or its constituent companies. The 40-foot modified V-bottom military type cruiser Pegasus, owned by Al-

fred I. duPont, of Wilmington, Del., and winner of the Western cruiser championship, is shown in the center. The adjoining views are of boats on the 200-ton marine railway of the corporation, and on the jib crane which also adjoins the corporation's yacht basin. The hydroplane to the left of Pegasus is the 30-foot single-step Mark Twain, powered with a 1912 eight-cylinder Sterling engine, which drove this famous boat 32 m.p.h. The picture to the right of Mark Twain is of one of the well-known 30-foot ten-passenger X-Celo family runabouts of the displacement

shows the patented windshield owned by the Great Lakes Company, which divides in the center, and disappears into pockets. To the left of this picture is shown one of the 18-foot stock model Wee-X-Celo runabouts, which have met with much favor. The cruiser to the right is one of fourteen standardized 45-foot raised-deck models built by the corporation for use in all parts of the country. The lower center picture is the 40-foot heavy-duty tug Webster, built for the Mississippi River Power Co. for breaking ice and general lightering about the Power Company's dam at Keokuk, Ia. The lower right-hand picture shows one of the corporation's standardized 31-foot hunting cabin cruisers, which are stated to have met with great favor as about the smallest, practical seaworthy family cruisers with full head room.

An Exciting Tussle with a Storm

A battle with a storm in mid-lake, in which two Detroit motor boat devotees faced capizing of their craft, is interestingly described in a letter received by The Ferro Machine & Foundry Co., of Cleveland, O. On a vacation trip in their runabout BhapE, Arthur B. Claycomb and Ralph Brown had run to Goderich, Ont., and had reached a point in Lake St. Clair opposite New Baltimore, when they were overtaken by the storm. Describing their experiences, Mr. Claycomb writes: "It didn't take us long to come to the conclusion that we had best lay out our life belts, and two apiece at that. We did a lot of thinking then and there, I tell you, and talked things over. Finally Brown, who was at the wheel, said: 'Take it, I'm all in,' so I put on my waterproof, but even that didn't keep me from getting soaked. But we had to joke even if we were facing going down. 'Give me one more cigar and I'll be satisfied,' Brownie shouted above the noise of the storm. 'The waves came so that one would hit us amidships and the next would cover the whole front. Sometimes the whole bow would be under water. Through it all the engine, a Ferro, never even paused for breath, and we finally made the mouth of the river just below Grosse Point.'

Wylly

The Georgia motor boat bugs are certainly not dead; in fact, the way they are going into the game even makes the Florida fans sit up and take notice. Savannah especially has jumped into the sport more than ever, and last year witnessed her make several notable additions to her fleet. One of the boats illustrated on this page is representative of the type springing into popularity in this section. The happy owner is a prominent Savannah business man, L. D. Wylly, secretary and treasurer of the Savannah Lumber Co. When not selling lumber for flooring and wooden legs, which are so immensely popular at this time, Mr. Wylly takes long trips along the coast and up the Savannah River. As he is sure of the reliability and seaworthiness of his outfit, he often takes long trips into the open ocean. The boat was built from the plans of the well-known designer, W. H. Hand, Jr., and constructed by Balder T. Elmgren, a local builder. Her power plant, a Model 14-60 Loew-Victor, with Leccc-Neville starting and lighting outfit, gives her a speed of 22½ m.p.h. under ordinary conditions.

Palmer Bros. Building Many Boats

Palmer Bros., of Cos Cob, Conn., have been among the first to feel the boom in the marine industry which is sweeping over the country and report that their boat building department is in full swing, turning out motor craft of various sizes. Of these a 45 x 12-foot day boat built from the owner's specifications is one of the most interesting. An unusual feature of the design is that in spite of its length it is practically an open boat, the only superstructure being a small cabin ten feet long aft of amidships. There is a cockpit aft of the cabin and the entire forward part of the hull except for a small deck is open. C. Wiltatch, of Brooklyn, N. Y., the owner, is an enthusiastic fisherman and keeps his boat in commission twelve months of the year. This is the third Palmer outfit that he has purchased, and the service obtained from the others has so satisfied him that he is equipping his 45-footer with one of the new type



Group view of some of the more important boats being turned out by the Great Lakes Company. They are described in detail in the accompanying text



Wylly, a Loew-Victor-powered Georgia motor boat, which isn't afraid to go anywhere. L. D. Wylly, of Savannah, is her owner



Carl Fisher's new boat, a Hand-Lawley-Sterling combination, which is declared to have met with excellent success. A speed of 38 miles is obtained

F six-cylinder four-cycle machines. The motor is housed in with a removable railing, and the entire cockpit and cabin is finished in mahogany.

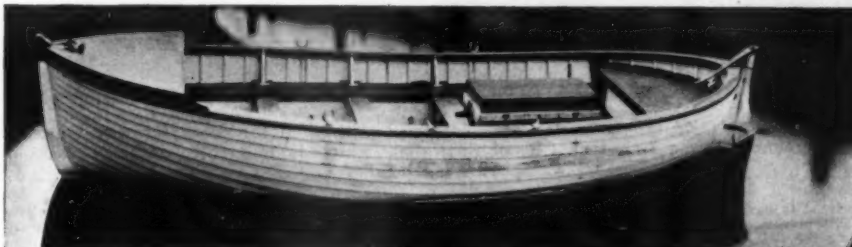
A 45-foot bridge deck cruiser is also under way for E. H. Patterson, of New York. This will be one of the finest cruisers ever turned out at the Palmer plant, the entire cabin, bridge and interior being finished in mahogany. The boat, which will be complete in every detail, will be equipped with a Model F4 32 h.p. heavy-duty Palmer motor, with Ward Leonard lighting and starting outfit. A 30-foot ferry boat is also under construction for Willis Delemater, of Peekskill, N. Y. This is the third time Mr. Delemater has come back to the Palmer people for more, his business having outgrown his two smaller boats. This boat is to be equipped with a Palmer four-cylinder four-cycle Model NR4 20 h.p. machine which will give a sustained speed of 10 m.p.h. In addition to the above five stock 32-foot raised-deck cruisers are under way, although this number, because of the large amount of space taken up by the other boats, is declared to be less than usual. The engine end of the business is stated to be much better than it was at this time last year.

Lipman Mfg. Co. Keeps Busy

The Lipman Mfg. Co., of Detroit, Wis., has for the past ten years made a specialty of circulating pumps, its products going to many of the largest manufacturers of marine engines, while large supply houses in Chicago, New York, Philadelphia, Seattle, San Francisco and other cities carry a full line of Lipman pumps constantly in stock. The Lipman Company has a large plant, including machine and foundry, and employs high-class skilled labor. It is stated that contracts and orders are steadily coming in, keeping the factory floor at top pitch all the time.

Another Hand-Lawley-Sterling Speeder

The accompanying photograph shows the new 32-



A 24-foot lifeboat now being turned out up at the Seabury plant, powered with a two-cylinder Speedway motor

foot V-bottom craft of Carl G. Fisher, making a speed of 38 miles an hour. The hull was designed by William H. Hand, Jr., and built by the George Lawley & Son Corp. The hull is of mahogany throughout. The engine which gives this runabout a speed undreamed of a few years ago is the famous Sterling racing engine, the eight-cylinder 3 1/2 x 6 1/2-inch machine with overhead valves, developing 250 h.p. at 1,700 r.p.m.

The photograph shows the boat during trials conducted by Mr. Hand. A speed of 38 m.p.h. in the waters of Massachusetts during January would be likely to chill the blood of even the most enthusiastic, but so successful were these trials that the discomforts were not heeded. The boat has been shipped to warmer waters, however, and will be a valuable addition to the speed fleet at Miami, the owner's winter home.

Regal Engines in China

The Regal Gasoline Engine Co., of Coldwater, Mich., has during the past two years developed quite an extensive trade in China, particularly around Shanghai. The Chinese Empire has many navigable rivers and canals, and in fact we are informed that the water route is about the only method of transportation in most of the country.

As China is being opened to the Western civilization the use of marine engines is becoming more universal, although compared with the prospects for future trade the marine engine has barely obtained a foothold. The dense population, however, and the many excellent waterways and large oil fields insure a brilliant future for the commercial boat engine and particularly those of American make if the open

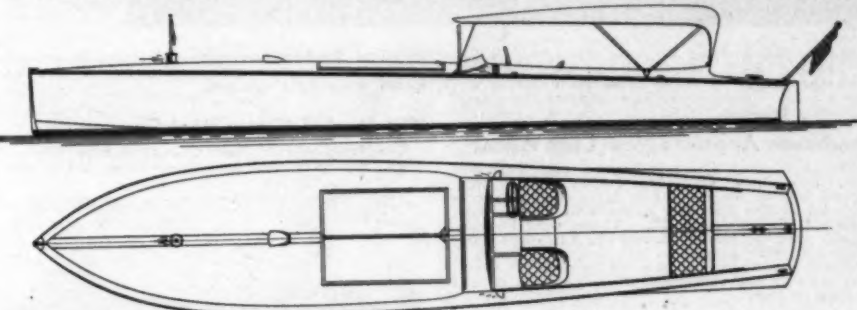


One of the Lipman circulating pumps

door policy in trade is continued. One of the photographs on page 44, shows Dah Pik, which is equipped with an 18 h.p. heavy-duty Regal.

An Attractive Hacker Runabout

The accompanying plan is that of a very attractive family runabout, now being built by the Albany Boat Corp., of Albany, N. Y., for a well-known



Plans of a 32-foot Hacker runabout, described on this page. She is of the popular wave-collecting type, and is built by the Albany Boat Corporation

Southern yachtsman. The design is the wave-collecting type from the board of John L. Hacker, who has designed a great many of the fastest and most successful boats of this type. The general dimensions of this runabout are 32 feet in length, 6 feet 5 inches in beam and a draft of 22 inches. It has an unusual amount of freeboard and an exceptionally roomy cockpit. The arrangement is

The Albany Boat Corp. has recently moved into its new plant, which is one of the finest plants in the country for the construction of this type of boat. L. L. Tripp, who was formerly sales manager of the Hacker Company, is president of the new company, and John L. Hacker, N. Y., is vice-president in charge of designing and production. A. M. Dederick, a prominent Albanian, is treasurer.

Another Bessie of Baltimore

A familiar sight to all motor boatmen of the vicinity of Baltimore has been R. J. Taylor's motor water boat Bessie, powered with a 12-15 h.p. heavy-duty Sterling motor. This craft was 50 feet in length by 10 1/2 feet beam and carried 9,000 gallons of fresh water about Baltimore Harbor at a speed of six knots.

To provide for the needs of an increasing business, Mr. Taylor has recently built a new and larger boat for carrying water. The new Bessie—for the owner gave her the same name as his former boat—is 64 feet 10 inches long, has a beam of 10 feet 10 inches and a depth of 7 feet 8 inches. The picture shows her laden with fifty-five tons of fresh water.

So satisfactory was the Sterling power plant in Mr. Taylor's former boat that he would consider nothing but a Sterling for his new craft. Accordingly a Model B, 35-55 Sterling was purchased

through Unger & Mahon, Inc., Sterling distributors for Maryland, and installed under the supervision of this concern. The boat was given a three-bladed Hyde propeller, 32 inches in diameter by 20-inch pitch. A speed of 7 1/4 m.p.h. is obtained when the boat is light and 5 1/4 m.p.h. when laden as in the photograph (page 44).

Why Not?

One of the illustrations on the next page shows the 21-foot Why Not, owned by F. C. Sutter, of Detroit, Mich. This boat is of Hand V-bottom design and was put together by Mr. Sutter himself. It is powered with a two-cylinder, 20 h.p. Roberts non-backfiring motor which Mr. Sutter says gives the boat a speed of 14 miles an hour. This is the third season's use of the outfit and the owner declares that the motor has been absolutely reliable and on the job at all times.

National Association Elects

At a recent election of the National Association of Engine & Boat Manufacturers the following officers were elected to serve on the Executive Committee for a term of three years: John J. Amory, George F. Lawley, Scott J. Matthews, A. W. Toppan and Walter L. Fay.

E. M. Ford Joins National Coil

It has just been announced that E. M. Ford has resigned his position as sales manager of the Elkhart Mfg. Co., of Monroe, Mich., and has ac-

made on the order of the highest class automobile, having a cowl dash and instrument board, bucket seats, etc. One of the things worthy of mention is an improved windshield. The shield is of the

disappearing type. It is flush with the cowl when not in use, and by stepping on a button it is raised to the position and locked. When the windshield is not wanted or access to the engine compartment is desired it can be disposed of instantly. This runabout is to be of solid mahogany, having a double-planked bottom, and finished in the finest manner possible. It is to be powered with a six-cylinder Van Blerck motor, and is guaranteed to make at least 35 miles per hour. This size is also built for a guaranteed speed of 38 miles. The Albany Boat Corp., which was formerly the John L. Hacker Boat Co., has built quite a number of boats of this type in the past three years, including fast cruisers, for prominent people, from whom it has received repeat orders. It constructs only boats of the highest quality, furnished completely equipped and with absolutely guaranteed speeds.



Buffalo, a serviceable fishing boat, owned by Capt. Frank Wilbur. She is powered with a 40-45 h.p. heavy-duty Buffalo motor



Why Not, a 21-foot boat, owned in Detroit, and

powered with a Roberts motor

cepted a like position with the National Coil Co., of Lansing, Mich. Mr. Ford has been connected with the Elkhart Company since its inception and has a very comprehensive knowledge of the marine accessory business.

Anderson Appoints New York Agent

The Fairbanks Co., of Broome and Lafayette Sts., New York City, has taken on the well-known line of Anderson four-cycle engines manufactured by the Anderson Engine Co., of 4036 North Rockwell St., Chicago, Ill. These motors range in size from $\frac{1}{2}$ to 150 h.p. and the Fairbanks Company will carry a stock of samples on hand. It is expected that there will be a big increase of Anderson sales in the vicinity of New York during the coming season.

Recent Yacht Sales

The following sales of yachts have recently been effected through the agency of Frank Boone Jones, of 29 Broadway, New York City: The houseboat Pamela, 102 feet in length, sold by Leon L. Peo to Otis H. Cutler, of New York; the 80-foot motor yacht Mahary, sold by H. C. Tinker to Col. William Hester, of Brooklyn, N. Y.; the 47-foot cruiser Wakonda, sold by A. Gardiner Cooper to Henry L. Maxwell, of New York; the 47-foot auxiliary yawl Cleona, sold by George Bullock to Henry W. Howe, New York; the 28-foot motor boat Shallow Water, sold by Carl G. Fowler to the Engineering & Exporting Co., of New York; the 26-foot auxiliary yawl Marchesa, sold by Chas. S. Byrbee to Edward F. Carey, of Poughkeepsie, N. Y.; and the 25-foot auxiliary yawl Independence, sold by Henry B. Anderson to Chas. Meyer, of Newark, N. J.

Fay & Bowen Sales

The recent motor boat show was a very profitable one for the Fay & Bowen Engine Co., of Geneva, N. Y., for it has recently been announced that the engine sales booked at this show largely exceeded any amount that the company had taken at any other show. Among recent Fay & Bowen sales is a four-cylinder engine complete with electric starter to a prominent official of the Havana Central Railroad.

The Pioneer 30-Footer

In our February issue, on page 48, we showed the plans of a recent model put out by the Pioneer Boat & Pattern Co., of Bay City Mich., but through error



The second Bessie of Baltimore. The first Bessie, also owned by R. J. Taylor, was a smaller water carrier, which has had to give way to another. A Sterling motor is used

gave information in the caption to the effect that this boat was a 35 x 9-foot fishing model. As a matter of fact she is a 30-foot V-bottom cruiser designed by A. L. Arnold of the Pioneer Co., and we take pleasure at this time in giving correct details of the boat's construction.

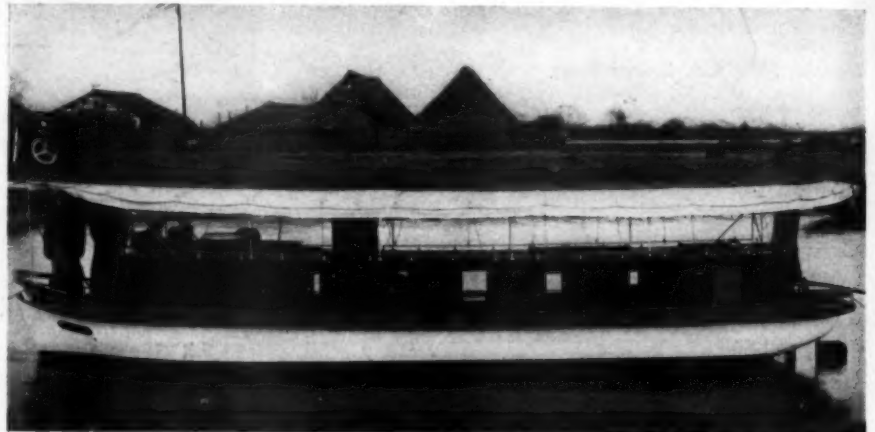
While this boat is small for a cruiser, she is very roomy, having a beam of 8 feet and a headroom of 5 feet 10 inches in the cabin. Regardless of this very liberal headroom she does not show that houseboat appearance so often seen in small cruisers of this description, as she has a very trim and yachty look. This is probably due to the great flare of her forward sections and her round sides aft, which not only adds to her appearance but makes her an extra good sea boat. She is declared to be just as well adapted to open as protected waters, and she is both safe and speedy with comparatively small power.

This boat is furnished by the Pioneer Boat & Pattern Co. either in the K-D, or completely built, ready for sea; also in two styles, viz., standard V-bottom type, or the standard V-bottom with semi-tunnel stern. The semi-tunnel stern will, no doubt,

appeal to Southern yachtsmen and others on account of the extra shallow draft, which is less than 20 inches when fully equipped.

The Dachel-Carter Boat Co.

The Dachel-Carter Boat Co., of Benton Harbor, Mich., has moved into its new quarters, and is now



Dah Pik is an Oriental passenger boat, equipped with a motor from faraway America. She is owned by the Dah Duk Co., of Shanghai, which is eminently satisfied with its 18 h.p. Regal

declared to have one of the largest and best equipped plants in the middle west. The new plant is located along the St. Joseph-Benton Harbor Ship Canal, midway between the two cities, both well known as ship and boat building centers.

The main building is of two stories, 200 feet long by 72 feet wide, with a third floor at one end for

The L-A Single- and Double-Cylinder Canoe Motors

One of the most interesting announcements of the season is that of the Lockwood-Ash Motor Co. of Jackson, Mich., regarding two new installed type canoe motors which are being manufactured in both single-cylinder and double-cylinder sizes.

The idea back of the design was to give the owner of a canoe an opportunity to procure an engine constructed especially for his needs, and to do away with every unnecessary detail of equipment with regard to installation, etc. For this reason the engines are designed as unit power plants with built-in fly-wheel magneto and with the gasoline tank attached directly to the engine. There are no wires to carry around the boat and no piping except the water and exhaust, which can readily be accomplished by using rubber hose. Further mention of these interesting models will be made in a subsequent issue.

New Dixie Models

The Sumter Electrical Co., 1413 Michigan Ave., Chicago, Ill., is announcing three new Dixie models in Advance Bulletin No. 65, just issued. Dixie No. 601 is a fixed spark machine for medium-sized single-cylinder stationary and marine engines. It is interchangeable in mounting dimensions with the HLI and HLB models which are now discontinued, and has about the same efficiency and electrical output.

Dixie No. 602 is the same in size and output as No. 601, the difference in the two machines being in the base dimensions only. Dixie No. 602 is interchangeable in mounting dimensions with the Dixie M-1, now in extensive use, but differs from this machine in not having the advance and retard feature.

Dixie No. 700 is an entirely new machine, being an oscillator for use on moderate speed single-cylinder engines requiring jump spark ignition, and where those advantages of easy starting (with auxiliary equipment), and intense spark independent of the engine speed, are desired.

All of these machines are constructed on the now widely known Mason Principle. There are no rotating coils, consequently no brushes nor collector rings of any kind. The close fitting covers make the machines dust- and weather-proof.

Trade Literature Received

The Kennebec Boat & Canoe Co., of Waterville, Me., has sent us its new catalog of outboard and inboard Kennebec motor canoes and various models of paddle canoes. This company also specializes on its Maine Coast rowboat which may be used with or without a detachable motor. The catalog is profusely illustrated with boating scenes and large photographic reproductions of the various models of the Kennebec line.

A very interesting and valuable catalog is produced by Wilcox, Crittenden & Co., Inc., of Middletown, Conn., and has recently found its way to this office. Besides listing the numerous items of the W. C. line of marine hardware, ground tackle, etc., the catalog gives some valuable information and tables of matters with which the motor boatman is closely concerned.

The V-Ray Co., of Marshalltown, Ia., issues several two-sheet folders descriptive of its V-Ray spark plugs. These folders give the important constructional details, and list the prices and sizes (Continued on page 64)

Calendar

- June 17—Annual Race, New York to Albany and Return.
- June 24—New York to Block Island.
- July 8—New York to Cornfield Lightship and Return.
- July 15—New York to Ambrose Channel Lightship and Return.
- August 15-16-17—Races for Thousand Islands Championship Challenge Cup, Alexandria Bay.
- September 2-4-5—Gold Cup Races at Detroit.

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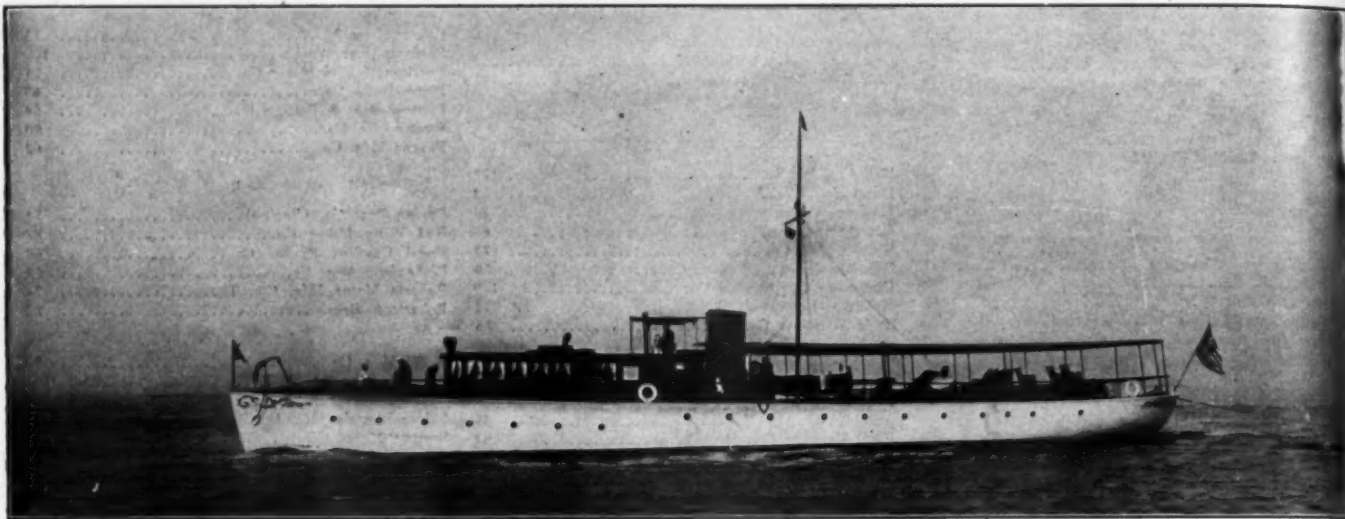
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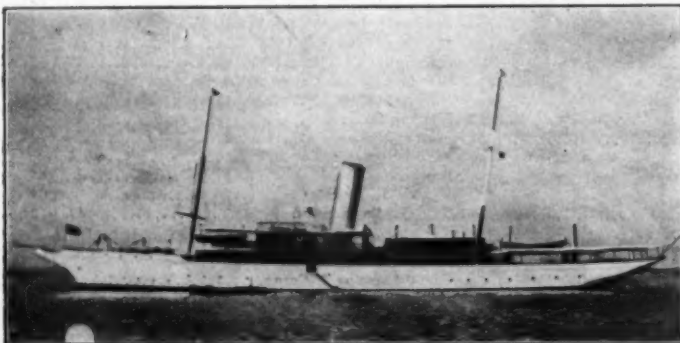
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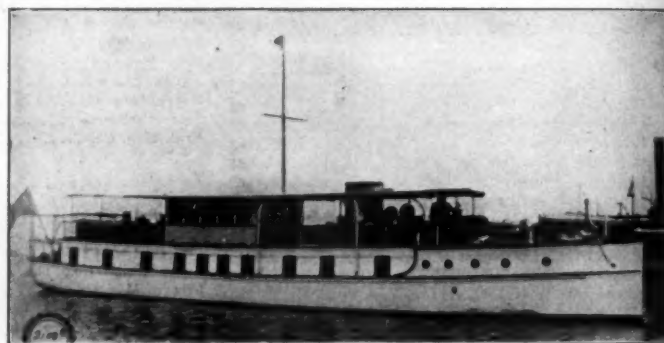
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



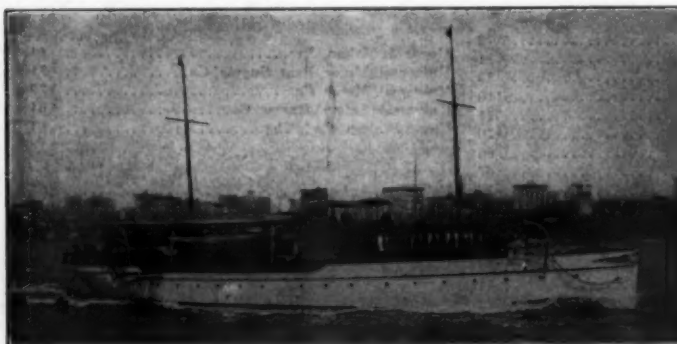
No. 885.—For Sale or Charter.—Handsome fast 120 ft. twin screw, steel power yacht. Speed up to 18 miles. Large dining saloon on deck, three double staterooms, main saloon, two bathrooms, etc. Price attractive. Cox & Stevens, 15 William St., New York.



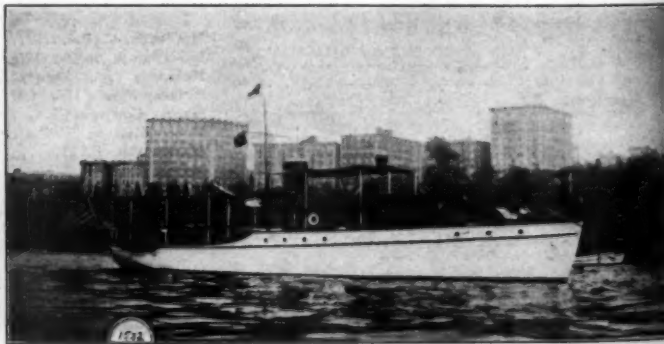
No. 270.—For Sale or Charter.—200-foot ocean-going steam yacht. Speed up to 15 knots. For further particulars apply to Cox & Stevens, 15 William Street, New York.



No. 2100.—For Sale or Charter.—Modern twin screw gasoline houseboat; 95 x 19 x 3.3 feet. Speed 13-14 miles; two 100 h.p. motors. Large social hall on deck. Dining saloon, four double staterooms, bath, etc. Very desirable craft. Cox & Stevens, 15 William St., New York.



No. 1820.—For Sale.—Especially desirable, up-to-date, twin screw cruising power yacht; 98 x 16 x 4 ft. Speed 14-15 miles. Large dining saloon and galley on deck; four staterooms, two bathrooms, etc. Low price. Cox & Stevens, 15 William St., New York.



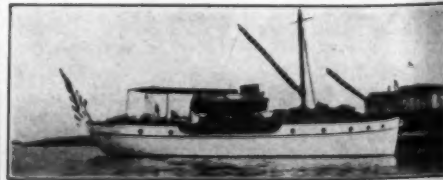
No. 1532.—For Sale or Charter.—Very desirable twin screw power yacht; 75 x 13.6 x 4 ft. Speed 12-14 miles. Recent build. Dining saloon and galley forward; three staterooms, bath, etc., aft. Price attractive. Cox & Stevens, 15 William Street, New York.



No. 1744.—For Sale.—Attractive twin screw gasoline cruiser; 67.6 x 13.6 x 4 ft. Highest grade construction by well known firm. Speed 11-12 miles. Standard motors. Dining saloon and galley forward; two double staterooms and bath aft. Price low. Cox & Stevens, 15 William St., New York.



No. 2842.—For Sale.—Twin screw raised deck cruiser; 55 x 13 x 3.9 ft. draught. Built 1912. Two 30/40 H.P. Sterlings; speed 10 miles. Double stateroom, saloon large galley, etc. Owned by Estate. Price low. Cox & Stevens, 15 William Street, New York.



No. 2880.—For Sale.—Up-to-date cruiser; 49 x 11.3 x 3 ft. Built 1913. 45/50 H.P. Holmes Motor; speed 12 miles. Accommodations for 5 or 6 people. Offer desired. Cox & Stevens, 15 William Street, New York.

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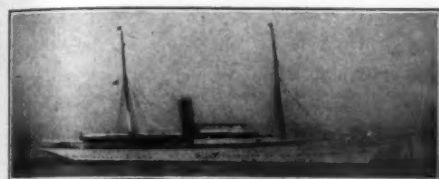
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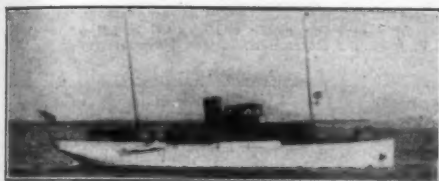
8014.—282-foot Steel Twin Screw Ocean Cruiser. Speed 15 knots. Luxuriously appointed.



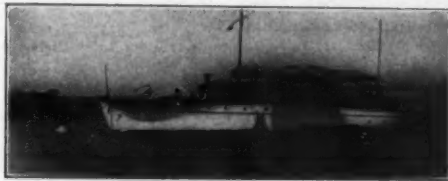
8218.—110-foot Twin Screw Cruiser. 22.2 beam. 4 draught. Exceptionally able. Speed 12 knots.



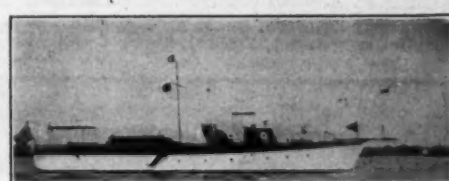
8001.—105-foot Twin Screw. 4 staterooms. 2 baths. Standard motors. Speed 21 miles.



7920.—94-foot Seagoing Cruiser. 300 h.p. Standard motor. Every convenience; 3 staterooms.



8204.—Twin Screw 75-foot Seagoing Cruiser. 2 staterooms and bath. Speed 10 knots.



7847.—70-foot Express Cruiser. Speed 13 miles. Fine accommodations. Economically maintained. Bargain.



7618.—Finest 60 footer available. Speed, 13 miles.



11815.—Keel Cruiser. 40 w. l., 62 o. a. 2 staterooms. Adapted for auxiliary. Smart sailer. Immediate sale desired.



8230.—Brand-new Twin Screw 59-foot Express Cruiser. 2 staterooms. Speed, 30 miles.



8219.—54 ft. Elco-de-Luxe gentleman's Express Cruiser. Beautifully finished and luxuriously appointed. 60 h.p. self-starting Standard engine. Speed 16 miles. Low price.



8159.—Roomiest 45 footer available. Double stateroom and saloon sleeps 6. 20th Century motor. Capable any sort cruising.



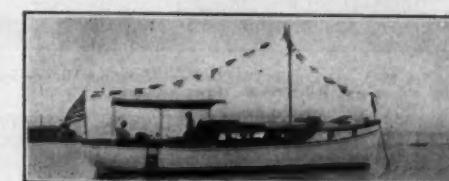
7281.—42 ft. Bridge Deck Cruiser. Built 1913. Stateroom and saloon berth 5 people. Mahogany interior. 20 h.p. 4-cycle engine. Speed, 10 miles. Electric lights. Full equipment. Bargain.



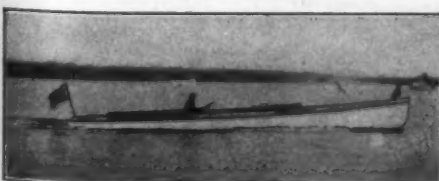
8214.—Able 40-foot Cruiser. Whitaker's design. Stateroom, saloon. Electric lights. 20 h.p. engine. Speed 9 miles. A-1 condition.



8155.—40 ft. High Grade Gentleman's Express Cruiser; ideal for ferry use. Built 1914. Cost over \$10,000. Double planked mahogany. Saloon with 2 sofa berths. Toilet. Galley. 150 h.p. Sterling; speed, 23 miles per hour.



8092.—Palmer Cruiser. 36½ o. a., 9 beam, 2½ draught. Stateroom and saloon sleep 4. Headroom, 6 ft. Mahogany finish. Electric lights. 20 h.p. 4-cycle engine; speed, 10 miles. Perfect condition.



8227.—35 x 5½ x 2. 30-60 h.p. 4-cycle Stearns new 1912. Speed 20 miles. Fine sea boat. Low price.



8212.—Very desirable 30 ft. Cruiser. 8½ beam, 2½ draught. Mahogany cabin. 6 ft. headroom. Toilet. 24 Lamb. Speed 11½ miles. Cost over \$3,000. Immediate sale desired. Owner has larger boat.



8200.—24 ft. Lawley Express Cruiser. Built 1913 from Hand's design. 30 h.p. Loew-Victor engine; Leece-Neville electric starter. Speed 20 miles per hour. Perfect condition.

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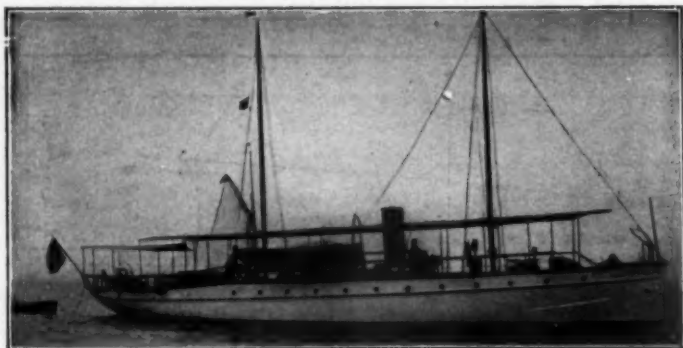
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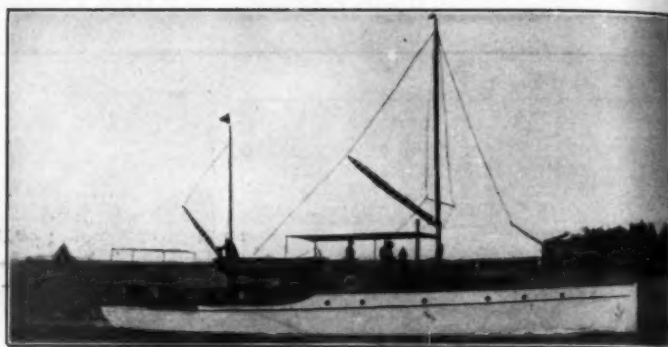
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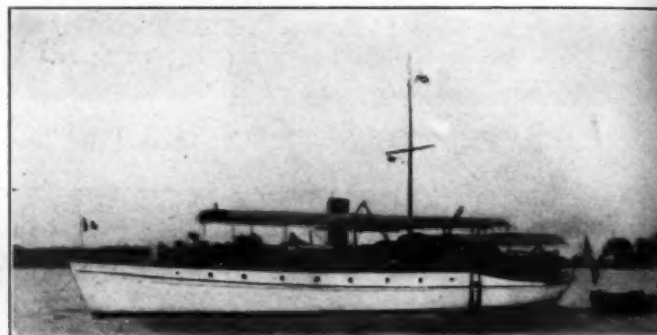
No. 8178.—Sale—Charter—85 ft. modern motor yacht. Excellent accommodations. Standard motor, speed 12 miles. Electric lighted. Large deck space.



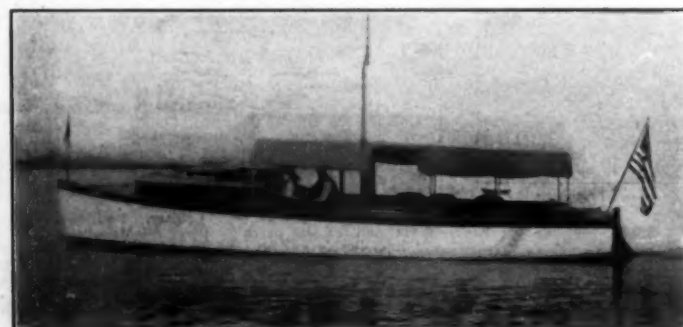
No. 8535.—Sale—Charter—Able seagoing motor cruiser, 64' x 12' 6" x 4' 5". 6-cylinder Loew-Victor, 60 H.P. motor; 2 staterooms, saloon, bathroom, etc.



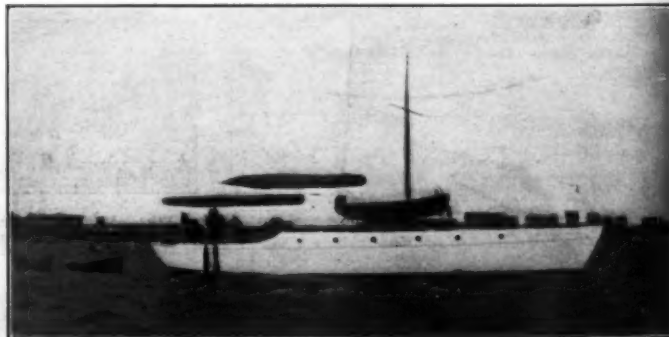
No. 7058.—Sale—Charter—98-foot twin-screw cruiser; 2-125 H.P. Standard motors, speed 15 miles. Four staterooms, dining saloon, two bathrooms, four W. Cs. Electric lighted.



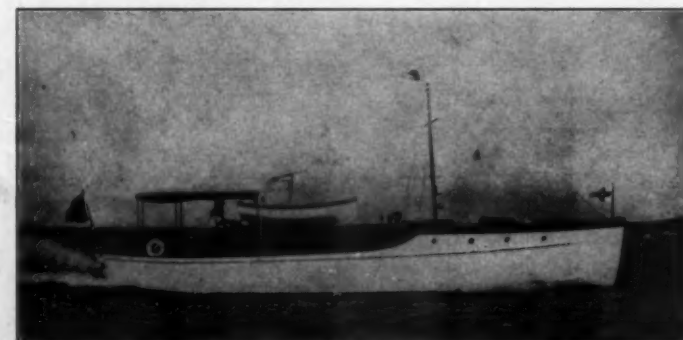
No. 7674.—Sale—Charter—Modern twin screw motor yacht 75' x 17' 6" x 3' 8" draft—20th Century motors. Speed, 12 miles. One double and one single stateroom and very large main saloon.



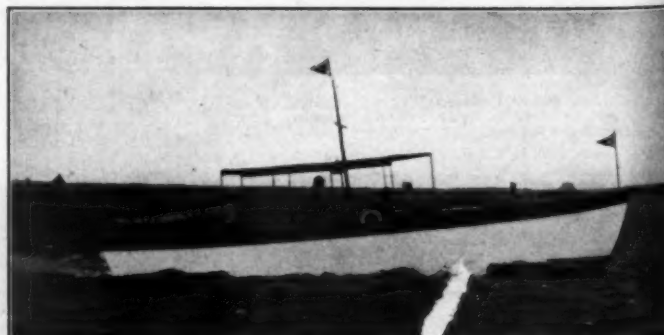
No. 8045.—Desirable Day Cruiser—Sterling Motor—Speed, 12 miles. Large cockpit, saloon and toilet room. Price attractive.



No. 7579.—Sale—Charter—Modern cruiser, 55' x 11' 6" x 3' 6" draft. Standard motor; speed, 11½ miles. 2 staterooms, saloon, 2 W. Cs.; electric lighted, etc.



No. 8338.—Exceptional opportunity to purchase the best of the smaller raised-deck cruisers available—43 ft. x 10 ft. x 3 ft. 8 in. draft. 40 H.P. Blount Motor new 1914. Speed 10 miles. Lighted by electricity. Stateroom with two berths and saloon 2 transom berths. Has toilet room, good galley and engine room. Abundance of locker room. Is a comfortable cruiser and of good sea-going qualities.



No. 8279.—Sale—Price attractive. Desirable raised deck cruiser. Lawley build. 60 H.P. Lamb motor, speed 17 miles. Stateroom with 2 berths, saloon, 2 transom berths, toilet room, electric lights, etc. Excellent condition throughout.

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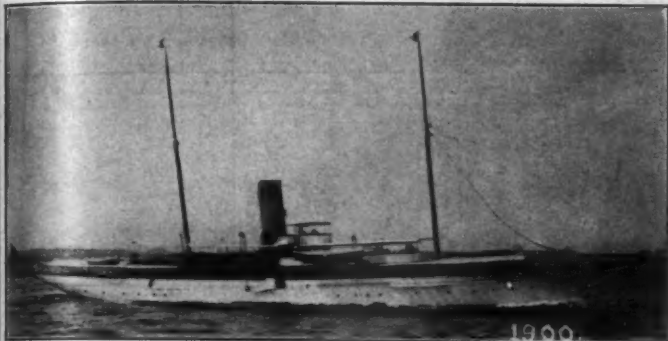
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We have probably the largest list of American and European Yachts of all types for sale, charter or exchange, of any marine broker. We give special attention to this department so that our information on each boat is always the most complete and up-to-date available.

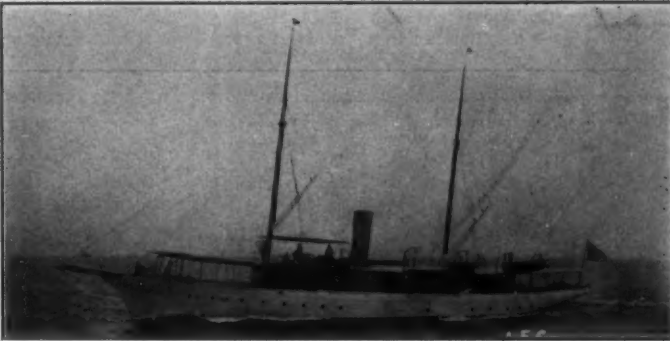
As there are upward of 5,000 yachts on our list, we can furnish you with exactly what you want, whatever the type, size, cost, equipment or class of service

you have in mind. We publish no book of these, because our list is so large and constantly changing, but we will promptly submit photographs and full information on all suitable boats on the market, if you mention your requirements.

Our long experience as architects and engineers lends an added value to our brokerage service, in expert appraisal and advice, estimate and supervision on alteration, etc.



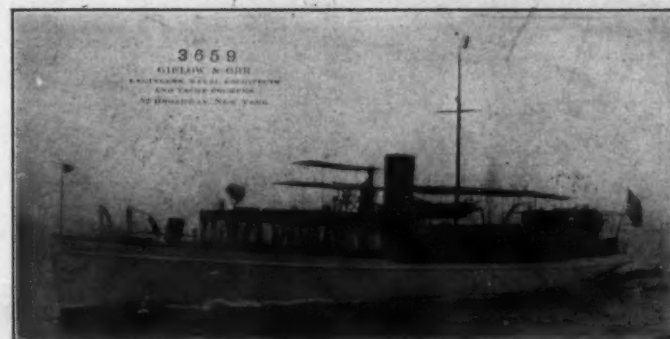
No. 1900—For Sale or Charter—195-foot single screw steam yacht. Suitable for offshore or coastwise cruising. 8 staterooms. 4 bathrooms. Triple expansion engine. Scotch boiler. Speed up to 13 miles.



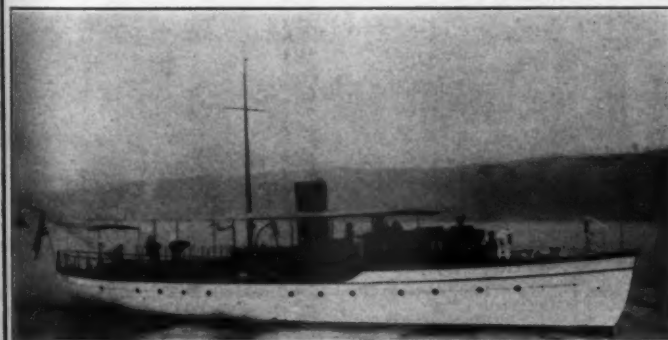
No. 156—For Sale—Unusual bargain, 160-foot single screw steel steam yacht. Fine accommodations. Excellent condition throughout. Subject to closest inspection. Fine seaboat.



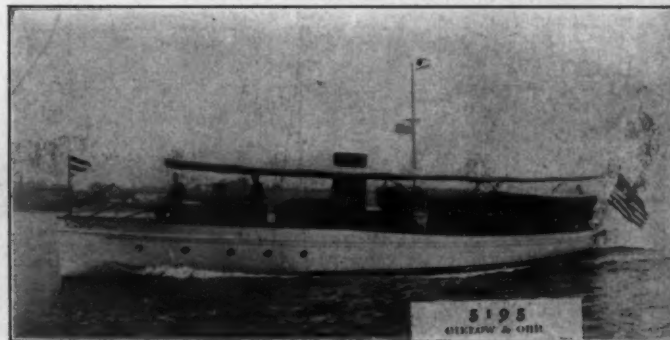
No. 434—For Sale—Auxiliary steam schooner, 162 feet x 120 feet x 28 feet x 16 feet draft. Unusually fine seaboat. Excellent accommodations. Has every convenience for offshore cruising.



No. 3659—For Sale or Charter—High class 100-foot twin screw motor yacht. 3 staterooms. Bathroom. Deck dining saloon. Large bridge and after deck. Speed up to 18 miles. Reasonable.



No. 5223—For Sale or Charter—84-foot twin screw motor yacht. Built 1914. Speed 12 to 13 miles. Deck dining saloon. 2 double staterooms. Main saloon. Bath room. Hot water heat. Electric lights.



No. 5195—For Sale—Bridge deck cruising motor yacht, 65 x 14 x 4 feet. 1915 construction. Speed 12 miles. 6-cylinder 68-70 H.P. motor. Sleep 8 in owner's party. Fine seaboat. Every convenience.



No. 5379—For Sale—Practically new cruising motor yacht, 55 x 13.6 x 3.6 draft. Launched Spring, 1915. Speed 11 miles. 40-50 H.P. Twentieth Century motor. Unusually well constructed. Fine accommodations.



No. 4266—For Sale or Charter—95-foot twin screw semi-houseboat. 4 double staterooms. Steel steam yacht. Unusual accommodations. Excellent condition throughout. Subject to closest inspection. Fine seaboat.

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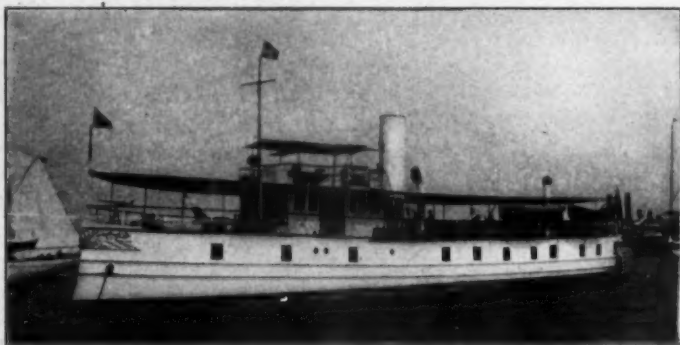
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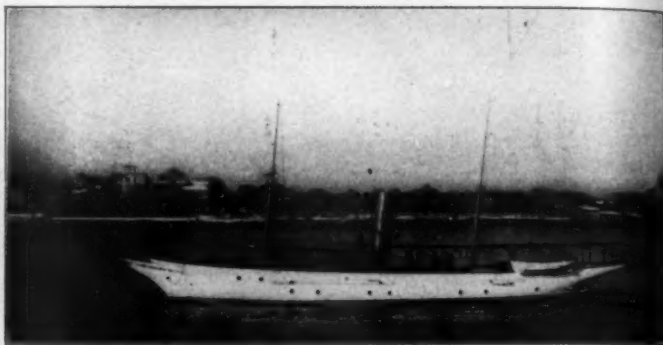
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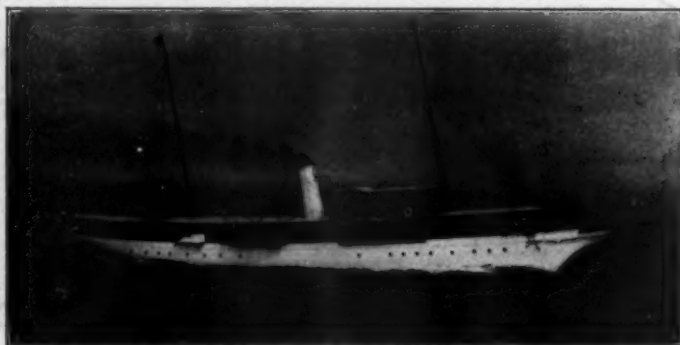
We have a complete list of Yachts of every description for sale and charter. Plans, Photos and full particulars furnished on request



No. 442.—Desirable Steam Houseboat, for sale or charter, 116 ft. over all, 21 ft. beam, 4 staterooms and bathrooms, music room and dining room.



No. 1586.—For Charter.—Gasolene Yacht, 106 x 13.6, large 6-cyl. Standard motor, speed 13 knots, 4 double staterooms, etc.



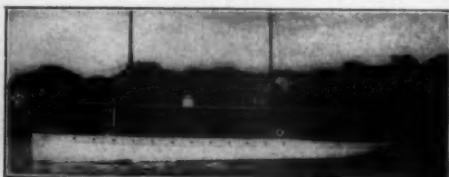
No. 416.—Steam Yacht, 177 ft., finely fitted and furnished; built by Gas Engine & Power Co.; speed, 18 knots.



No. 1227.—Sale—Charter—Lawley built cruiser, 90 x 14.6 six cylinder Standard; speed 12 knots.



No. 1800.—Modern Bridge deck cruiser, 67 x 13, high-class construction, two Standard motors.



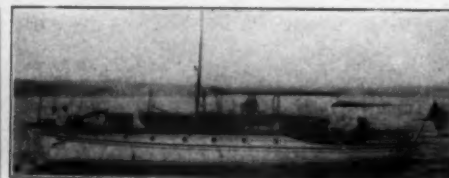
No. 1760.—Raised deck cruiser, 85 x 15.6, built 1911, six-cylinder Standard motor, comfortable accommodations.



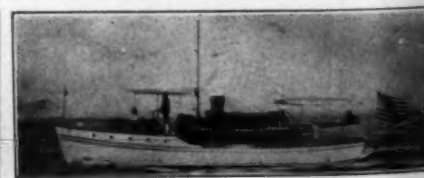
No. 1515.—Exceptional seaworthy cruiser, 66 x 13.6, Sterling 8 cyl. engine. Speed 14 miles.



No. 1782.—Fast Bridge Deck Cruiser, 56 x 9.6, new 6 cyl. 100 H.P. Murray & Tregurtha motor.



No. 1423.—Raised deck cruiser, 55 x 12, Standard motor, with deck control.



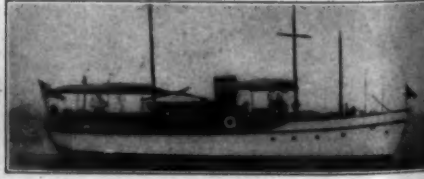
No. 1890.—Modern cruiser, 49 x 12, new Standard motor, speed 10 miles.



No. 2055.—Bridge deck, 58 x 11.4 x 3.6, fifty H.P. Twentieth Century motor installed 1914, speed 12 miles.



No. 1847.—Fast cruiser, 52 x 9, six cylinder Sterling motor, speed 15 miles.



No. 1869.—Bridge deck cruiser, 56 x 12 x 3, 40 H.P. motor; attractive figure.

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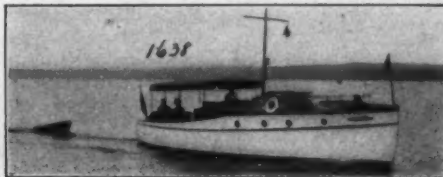
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Our list comprises all the available yachts for sale and charter. Below are a few of our offerings. If none of these appeal to you, write us your requirements. Our knowledge of the yachts we offer, and our 22 years' experience in the business, insure satisfaction to any one buying or chartering a yacht through this office.



No. 1342—43-foot cruiser. Stateroom and saloon sleep six. Standard motor. Speed 10 miles. Or will exchange for shoal draught auxiliary sloop, yawl, or schooner, 40-foot waterline.



No. 1638—40-foot cruiser. Stateroom and saloon. Sleep four. 20 H.P. engine. Electric lights, etc.



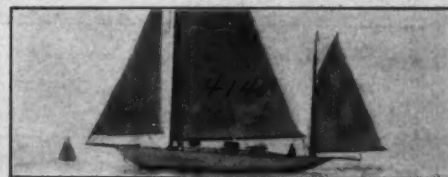
No. 1493—58-foot cruiser. Stateroom, saloon, etc. Sleeps 5 to 7 people. 35 H.P. engine. Electric lights, etc.



No. 1520—106-foot flush deck motor yacht. Four staterooms, saloon, bathroom, etc. Standard motor. Speed up to 16 miles.



No. 1606—85-foot twin screw power yacht. Two staterooms, saloon, etc. Two 30-40 H.P. motors. Speed 12 miles.



No. 4148—46-foot auxiliary keel yawl. Stateroom with two berths. Saloon, two berths and transom. Sterling motor. Speed 7 miles.



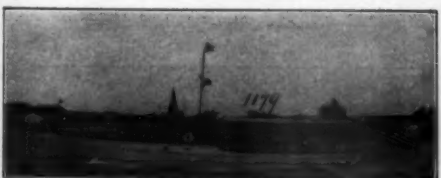
No. 3517—76-foot auxiliary centreboard yawl. Three staterooms, saloon, etc. 40 H.P. motor.



No. 4179—One design sound schooner, 41 ft. x 30 ft. x 8 ft. x 6 ft. Two berths in cabin.



No. 4184—Auxiliary centreboard schooner, 46 ft. long, 2 ft. 8 in. draught. Stateroom and saloon, sleep five. Sterling motor. Speed 7 miles.



No. 1179—60-foot power yacht. Stateroom, two saloons, etc. 40/60 H.P. motor. Electric lights. Speed 11 miles.



No. 2071—Auxiliary steam schooner. 200 feet, built of steel. Seven large staterooms, saloons, four baths, etc. Fit to go anywhere.



No. 3725—Steam yacht, 180-foot. Five staterooms, dining saloon, social hall, three baths, etc. Speed up to 20 knots.



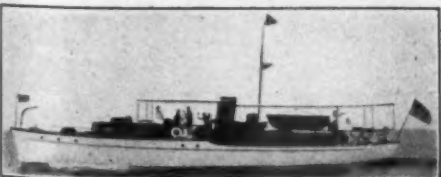
No. 2498—Steam Yacht, 150 ft. Six staterooms, saloon, social hall, several baths, etc. Speed up to 12 knots. Suitable for off-shore cruising.



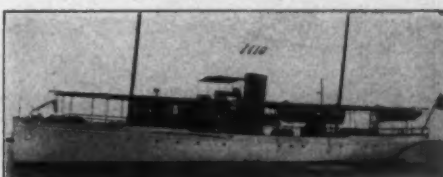
No. 2340—117-foot steel steam yacht. Three staterooms, saloon, bath, etc. Speed up to 14 miles. Price low.



No. 1572—43-foot cruiser. Stateroom and saloon. Sleeps five. 40 H.P. motor. Speed 10 miles.



No. 1337—67-foot twin screw cruiser. Two staterooms, saloon and bath. Speed 12 miles. Bargain.



No. 1110—95-foot seagoing power yacht. Three staterooms, dining saloon, two baths, etc. Standard motor. Speed 14-16 miles.



No. 1462—42-foot cruiser. Stateroom, saloon, etc. Sleeps five. Electric light. 20-25 H.P. engine.

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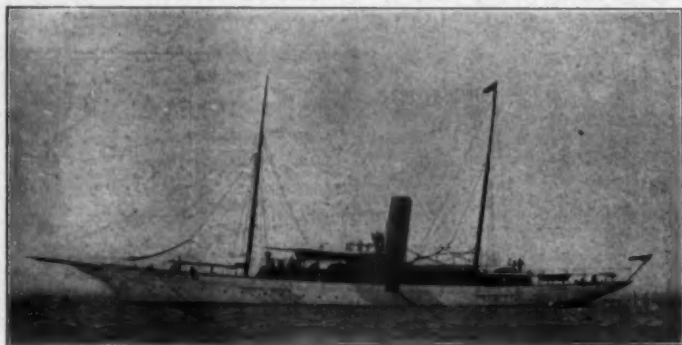
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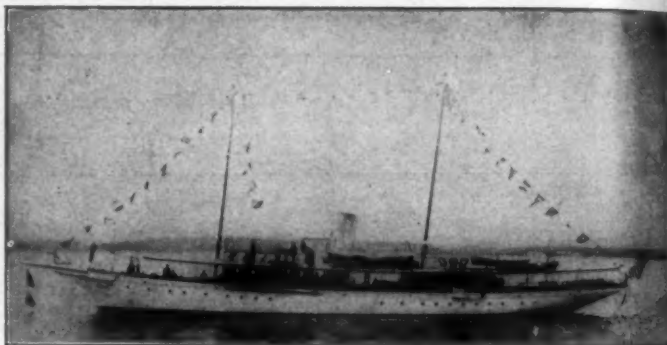
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Descriptions, Prices on Request

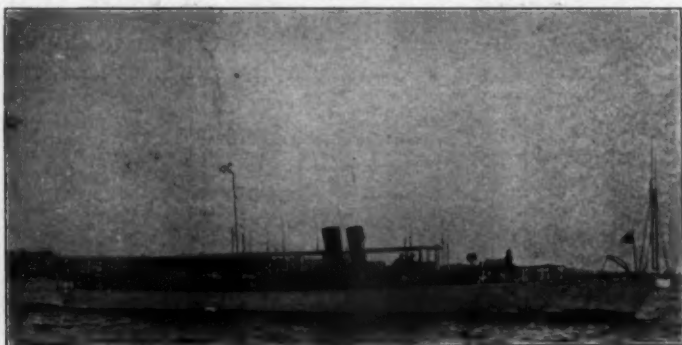
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No. 3852—200 ft. Steel Sea Going Steam Yacht; one of the finest vessels in the fleet.



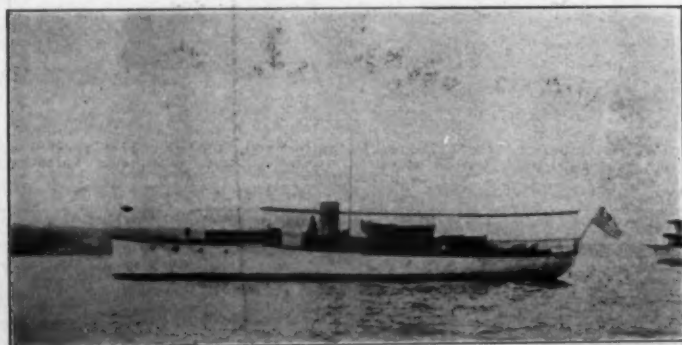
No. 2953—145 ft. Steam Yacht; Lawley build; owned by an estate.



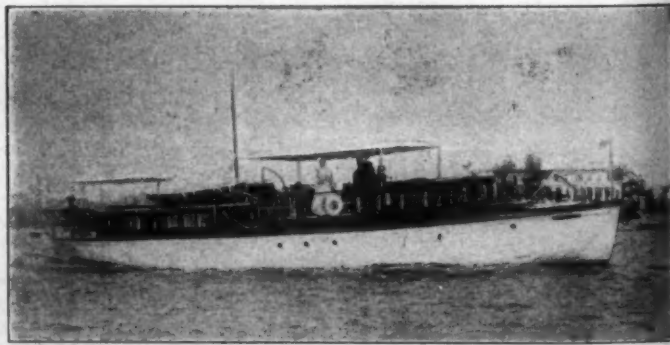
No. 2210—115 ft. Exceptionally fine Seabury Express Steam Yacht.



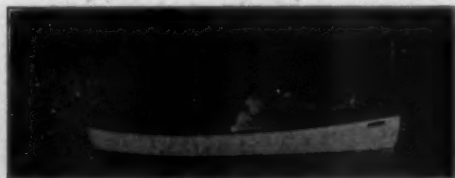
No. 7103—For Sale or Charter—106 ft. Motor Yacht; Standard engines; excellent accommodations; splendid cruiser. Condition good as new.



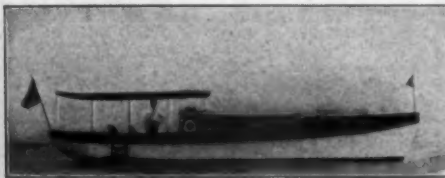
No. 5618—70 ft. Motor Yacht; excellent sea boat; 13 miles speed; Holmes motor and exclusive improvements 1914; good accommodations.



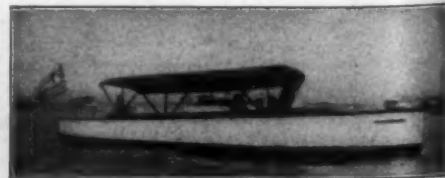
No. 5950—68 ft. Day Cruiser, suitable for extended cruises; Seabury build; in fine condition.



No. 132—Well-built 27 ft. Cabin Cruiser; 11 H.P. motor; electric lights; low price.



No. 7124—42 ft. Gasoline Cruiser; finished inside and out with selected mahogany; A-1 condition; completely equipped; 4-cycle motor.

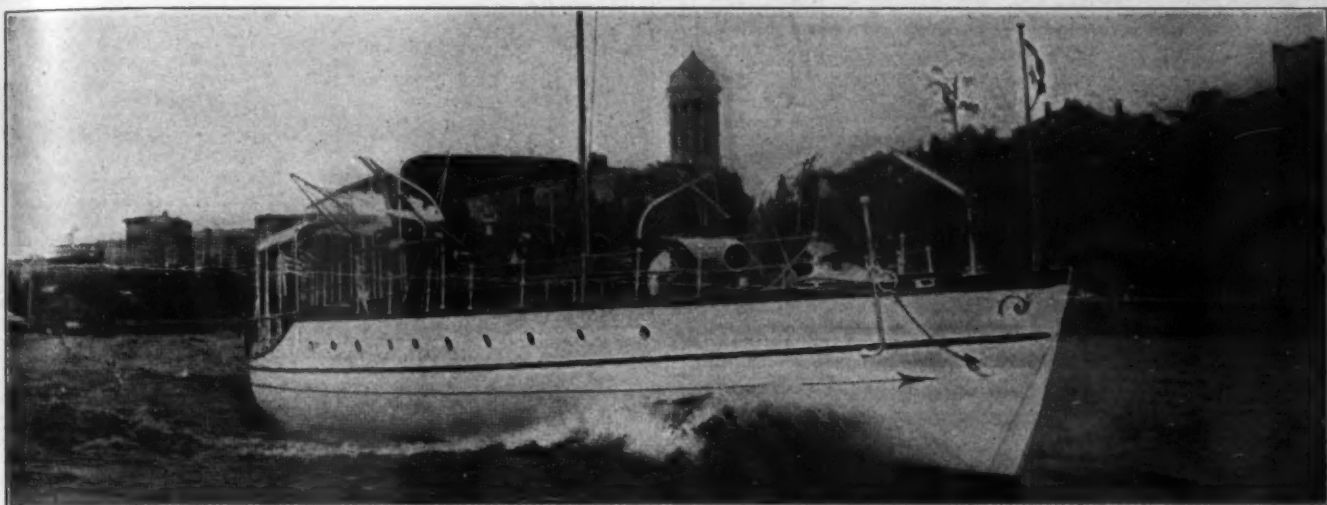


No. 7197—30 ft. Family Runabout; recently built; furnishings 1915; 10 H.P. engine.

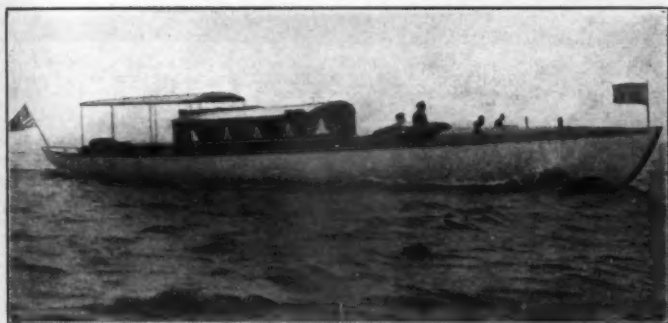
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32 BROADWAY

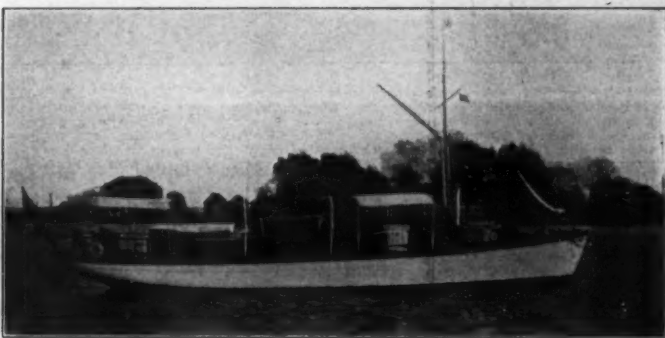
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54 ft. Elco de Luxe, 1910. Six-Cylinder Standard, day cruiser, with cabin.



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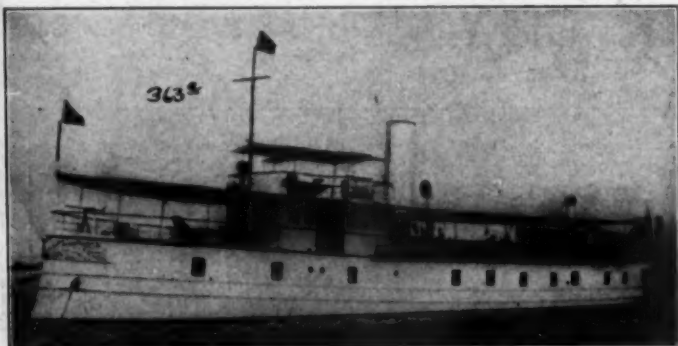
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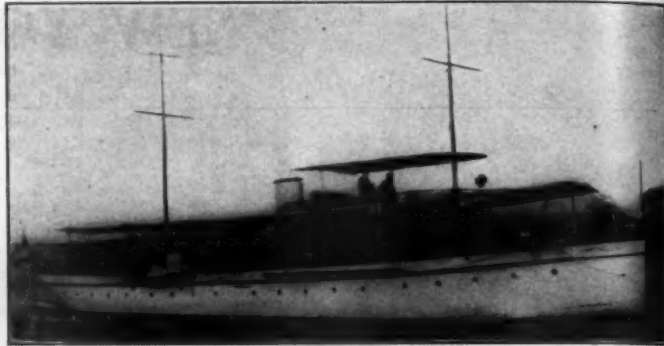
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15 William St., New York
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Cable—BROKERAGE.

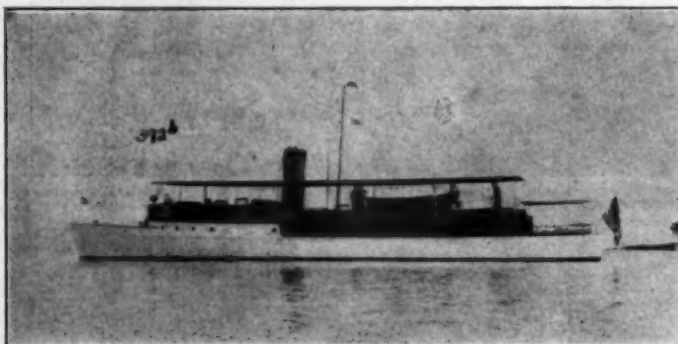
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



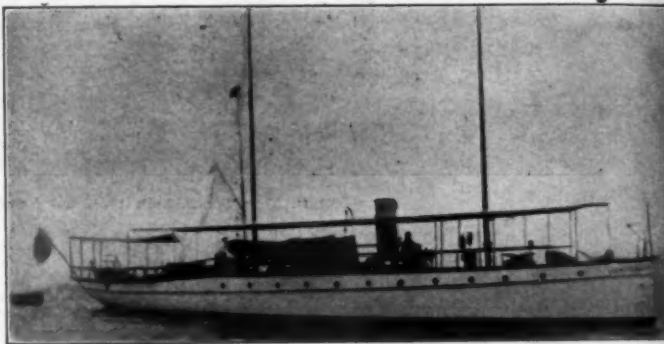
No. 363.—For Sale or Charter.—Most attractive houseboat of large size; luxuriously furnished; all conveniences; must be seen to be appreciated. Cox & Stevens, 15 William Street, New York.



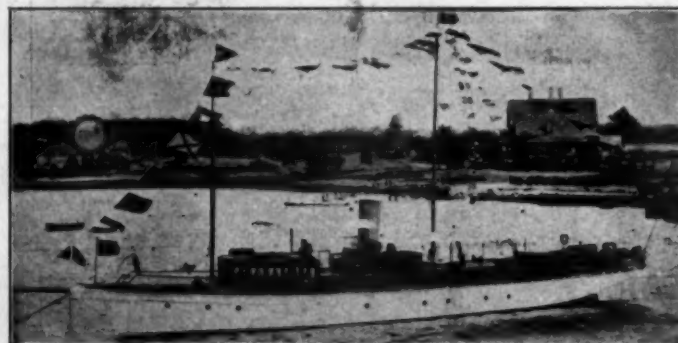
No. 1796.—For Sale or Charter.—Very roomy, twin screw cruising power yacht; 99 x 17 x 4 ft. Recent build. Speed 13-15 miles; Standard motors. Large dining saloon, six staterooms, three bathrooms; all conveniences. Cox & Stevens, 15 William Street, New York.



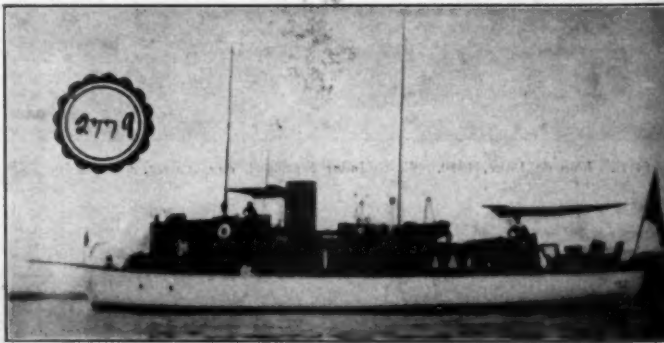
No. 392.—For Sale.—Very able power yacht; 92 x 13 x 4.2 ft. Speed 13-14 miles. 105 H.P. 6-cylinder 20th Century motor. Electric lights. Accommodations include large main saloon with two transom berths, two double staterooms, bath and two toilets, etc. Interior finish mahogany throughout. Unusually large deck space. In excellent condition throughout. Always had best of care. Equipment complete, including power tender and dinghy. Available at attractive figure. Apply to Cox & Stevens, 15 William Street, New York.



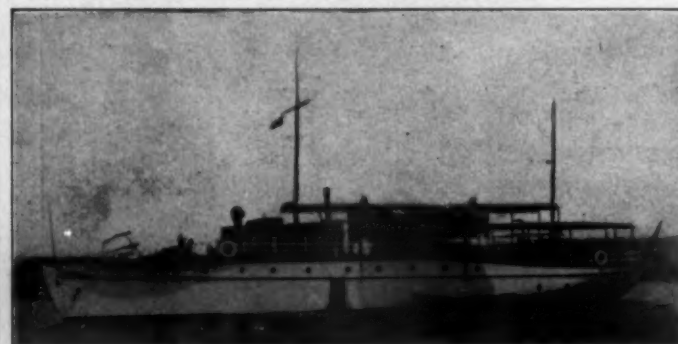
No. 1503.—For Sale or Charter.—Flush deck gasoline cruiser; 85 x 15.6 x 4 ft. Very able craft. Speed 12 to 13 miles; Standard motor. Excellent accommodations. Price very low for immediate disposal. Cox & Stevens, 15 William Street, New York.



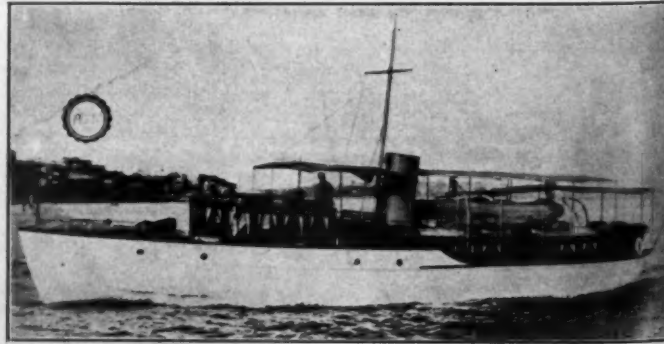
No. 573.—For Sale.—Twin screw power yacht, 90 x 14.6 x 3.2 ft. Speed 11 miles. Large accommodations include dining and main saloons, three staterooms, bath, two toilets, etc. Very economical to operate. Also adapted for Florida waters. Bargain for early disposal. Cox & Stevens, 15 William Street, New York.



No. 2779.—For Sale.—Cruising power yacht, 80 x 14 x 4 ft. 75 H.P. 20th Century motor. Accommodations include large saloon, stateroom, pilot house, two toilet rooms, galley, etc. Electric lighted. Finished in panelled mahogany. In best of condition. Price low. Cox & Stevens, 15 William St., New York.



No. 1526.—For Sale.—Very able, twin-screw power yacht, 75 x 14 x 6 ft. Recent build. Very heavily constructed; splendid seaboat. Speed 11½ miles. Two staterooms, large saloon, bath, electric lights, etc. Large deck space. Price attractive for immediate disposal. Cox & Stevens, 15 William St., New York.



No. 1937.—For Sale at low figure.—Modern gasoline cruiser, 65 x 12 x 3.9 ft. Built 1912. Speed 12 miles. Substantially constructed—handsomely finished. Large saloon forward of engine room and galley; main saloon, double stateroom and bath-room aft. Special opportunity. Cox & Stevens, 15 William Street, New York.

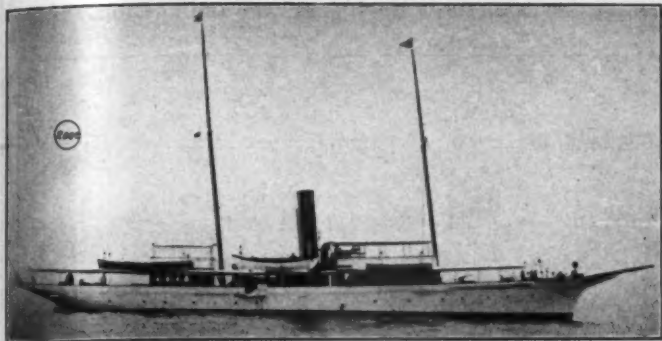
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We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



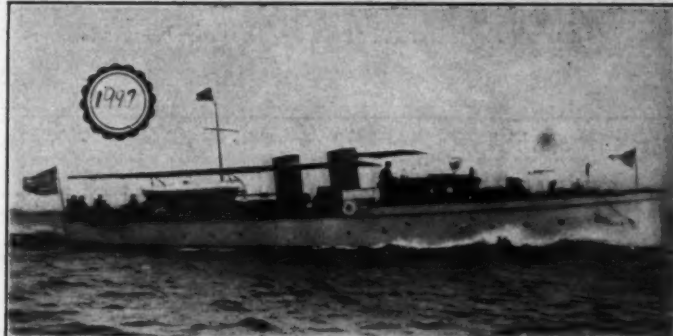
No. 200—For Charter—165 ft. steel steam yacht. Splendid seaboat. Economical to operate. Large accommodation. Cox & Stevens, 15 William Street, New York.



No. 13—For Charter—110 ft. twin screw cruising steam yacht. Speed 14 miles. Exceptional accommodation. Apply to Cox & Stevens, 15 William Street, New York.



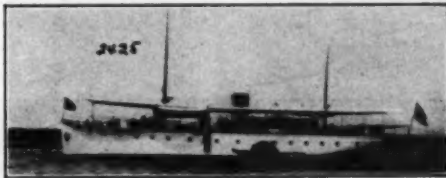
No. 1071—For Sale—At low figure—Fast, flush deck, cruising steam yacht, 115 x 14.3 x 6.5 ft. Speed up to 18 miles. Lawley built. Triple expansion engine; boiler new 1912. Large accommodation; dining and main saloons, toilet room, etc., forward; two double staterooms, after saloon, bath and two toilets aft. Handsomely furnished. In excellent condition. Bargain for immediate disposal as owner has purchased larger yacht through us. Cox & Stevens, 15 William Street, New York.



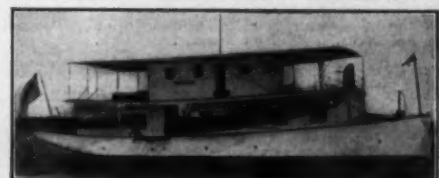
No. 1997—For Sale—Attractive power yacht, 81 x 12 x 4 ft. Speed up to 15 miles. Recent build. Dining saloon forward; main saloon, one double and two single staterooms aft. Price reasonable. Cox & Stevens, 15 William Street, New York.



No. 2247—For Sale at low figure—Twin screw, flush deck power yacht, 90 x 15.3 x 4.9 ft. Very able craft. Recent build. Speed 13 to 14 miles. For full particulars apply to Cox & Stevens, 15 William Street, New York.



No. 2425—Bargain—Twin screw, flush deck power yacht, 90 x 16.6 x 4.6 ft. Extremely able craft. Very heavily constructed. Speed 12 to 14 miles. Offer wanted. Cox & Stevens, 15 William Street, New York.



No. 298—For Sale or Charter—Twin screw gasoline houseboat, 68 x 23 x 4 ft. Speed 10 miles. Five double staterooms. Low price. Cox & Stevens, 15 William Street, New York.



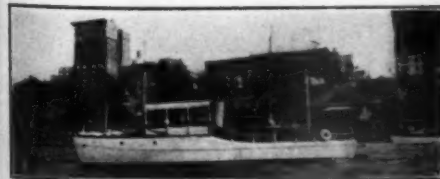
No. 2053—For Sale or Charter—Bridge deck cruiser, 56 x 11 x 3.6 ft. 35/45 H.P. 20th Century motor. Speed up to 12 miles. Double stateroom, saloon, galley, etc. Prices attractive. Cox & Stevens, 15 William Street, New York.



No. 2789—For Sale—Bridge deck cruiser, 55 x 11 x 4.3 ft. Built 1910. 40 H.P. Sterling motor; speed 11 miles. Double stateroom, saloon, toilet, galley, etc. Electric lights. Finished in African mahogany. Large deck space. Located on Great Lakes. Price attractive. Cox & Stevens, 15 William Street, New York.



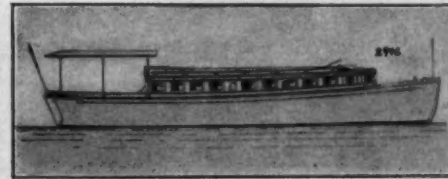
No. 1502—For Sale—Fast bridge deck cruiser, 55 x 9.6 x 3.8 ft. Built 1911. 80/100 H.P. Murray & Tregurtha motor installed August, 1915. Speed up to 16 miles. Double stateroom, saloon, galley, etc. Electric lights. Finished in mahogany and white enamel. In excellent condition. Cox & Stevens, 15 William Street, New York.



No. 917—For Sale—Twin screw bridge deck cruiser, 46 x 10 x 3.6 ft. draught. Designed and built by the Bath Marine Construction Co., in 1910. Two 15/20 H.P. motors new 1912; speed 10 miles. Accommodations include stateroom and saloon sleeping 4 people comfortably, toilet room and galley. Also room for man forward. Interior finish mahogany and white enamel. Complete equipment. Electric lights. Has had best of care and is in excellent condition. Very able craft for her size. Immediate sale desired by owner. Located in New York. Further particulars from Cox & Stevens, 15 William Street, New York.



No. 2914—For Sale—Hunting cabin cruiser, 45 x 9 x 3.6 ft. 18/24 H.P. 20th Century motor; speed 9-10 miles. Large saloon containing two transom berths sleeping four comfortably; galley and toilet. Fully found. Has had best of care. Price low. Cox & Stevens, 15 William Street, New York.



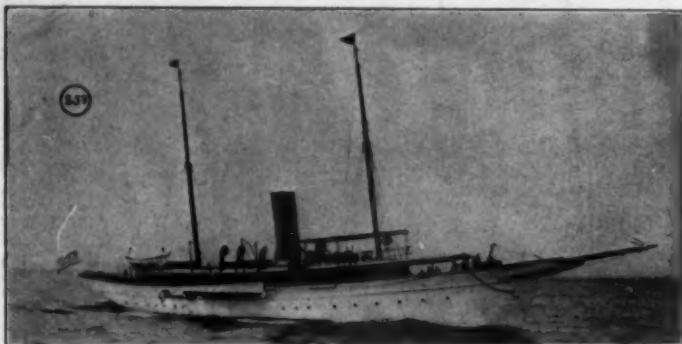
No. 2942—Bargain for quick sale—Hunting cabin cruiser, 40 ft. o.a., 9 ft. 6 in. beam, 3 ft. draft. Built 1913 by New York Yacht Launch & Engine Co., 20 H.P. 20th Century motor. Speed 10 miles. Large saloon containing four berths; toilet room and galley. Electric lights. Finished in paneled mahogany. Full equipment and everything of the best. Engine located under after deck entirely out of the way. In excellent condition and can be inspected near this city. Further particulars from Cox & Stevens, 15 William Street, New York.

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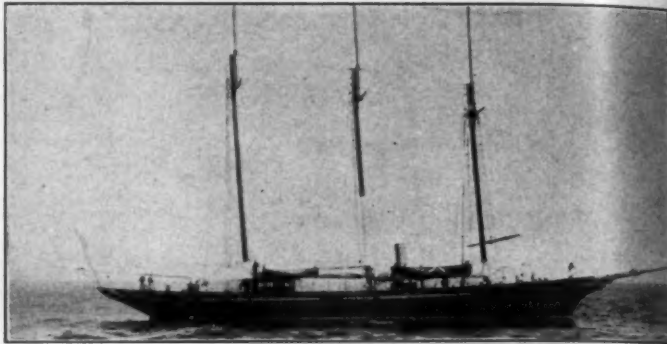
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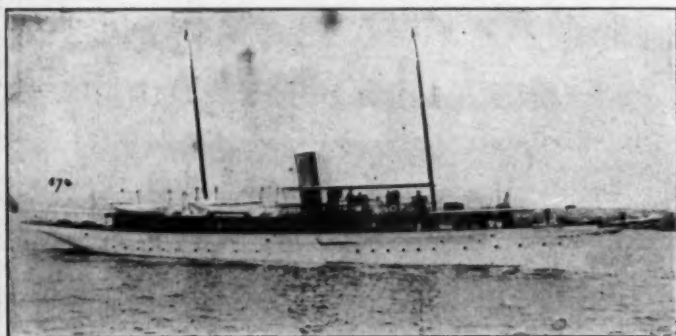
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



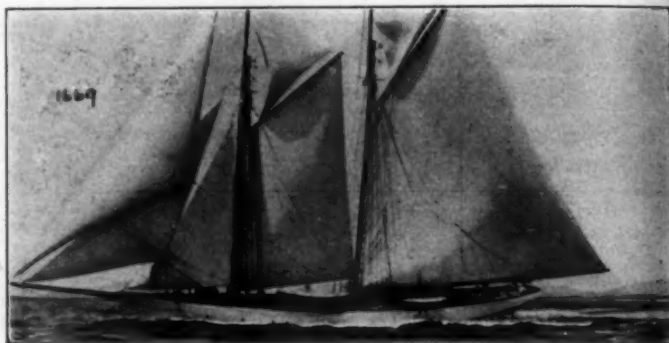
No. 85.—Able 200 ft. Steam Yacht. Price very moderate. Cox & Stevens, 15 William Street, New York.



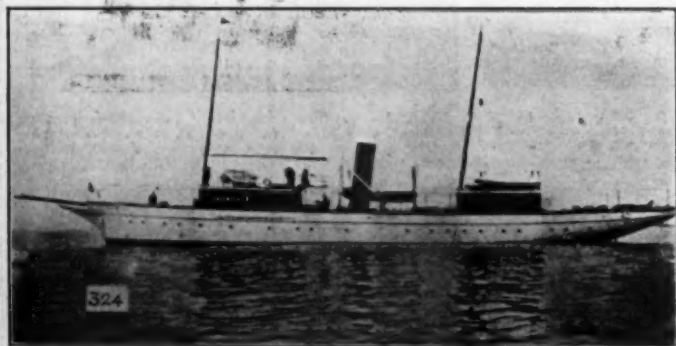
No. 24a.—165 ft. overall Steam Auxiliary Schooner Yacht. Speed, 9 knots. Excellent accommodation. Low price. Apply to Cox & Stevens, 15 William Street, New York.



No. 87.—Seaworthy 150 ft. Steam Yacht. Unusual accommodations. Price low. Cox & Stevens, 15 William Street, New York.



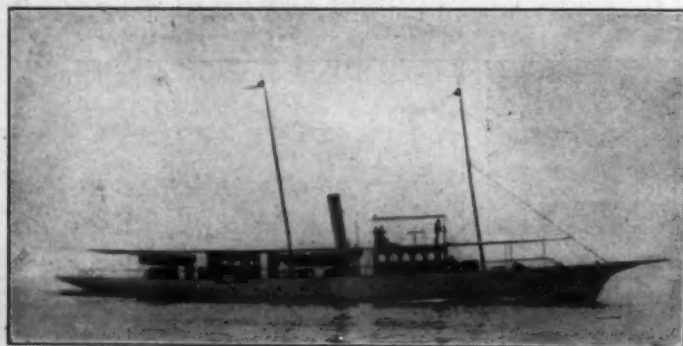
No. 1669.—For Sale.—Very able auxiliary schooner yacht, 135 ft. overall. Speed under power, 8 miles. Good accommodation. Cox & Stevens, 15 William Street, New York.



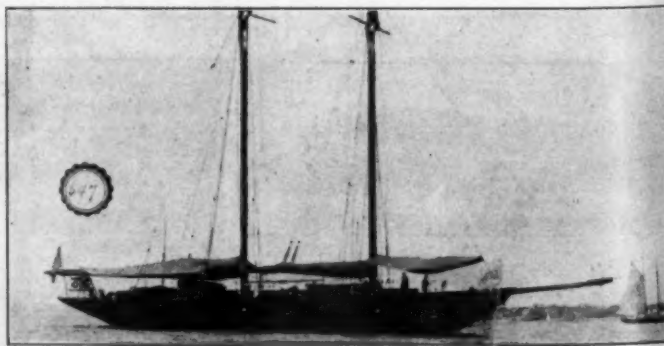
No. 324.—Modern 140 ft. Steam Yacht—very desirable. Price moderate. Cox & Stevens, 15 William Street, New York.



No. 1728.—Best modern auxiliary schooner yacht available; 115 ft. overall—Lawley built. Speed under power, 9 knots. Large accommodation. Cox & Stevens, 15 William Street, New York.



No. 111.—Roomy 120 ft. Steam Yacht. Economical to run. Price moderate. Cox & Stevens, 15 William Street, New York.



No. 647.—For Sale or Charter.—Modern flush deck auxiliary schooner yacht. 106 x 75 x 24.6 x 5.6 ft. Speed under power, 9 knots. Large saloon, three state-rooms, two bathrooms, electric lights, hot water heating plant, etc. Price very low for quick sale. Cox & Stevens, 15 William Street, New York.

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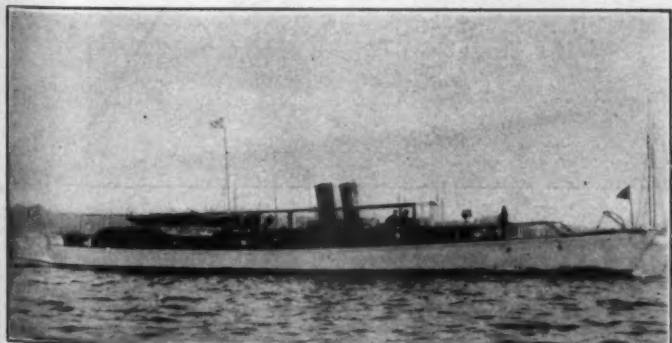
No. 2285.—For Sale.—Twin screw cruising motor yacht, 70 ft. x 13 ft. 6 in. x 3 ft. 6 in. draft. Unusually commodious and well arranged for cruising. Main cabin contains 4 berths, each 6 ft. 3 in. long with individual lockers and drawers under. Sideboard, writing desk and dining table in main saloon. 2 staterooms. Owner's room contains 2 large berths. Finish and equipment A-1 throughout. Abundance of deck room. Ice box holds 600 pounds. Large fresh water and gasoline capacity. Good quarters for the crew. Yacht has always been well cared for, and is subject to closest inspection. Will be sold at low price to close an estate. (Photograph shows sword fishing pulpit in place.)



No. 1414.—For Sale.—Single screw, flush deck steel steam yacht, 129 x 16 x 6 ft. 9 in. draft. Speed up to 16-17 miles per hour. Gielow design. 2 double, 3 single staterooms. 2 deckhouses. Large bridge. Triple expansion engine. Army watertube boiler. Very completely found. Has always had the finest of care and at present is in best condition. Unusually good seaboat.



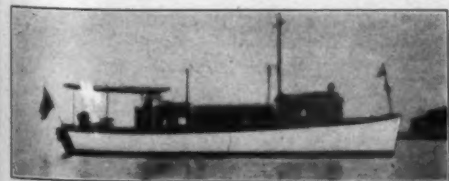
No. 4405.—For Sale.—Single screw, flush deck steam yacht, 129 x 15.9 x 6 ft. draft. Speed 16 miles. 2 double and 2 single staterooms. 7-foot headroom. Triple expansion engine. Watertube boiler. Electric lights. Deck dining saloon. Large after deck. Strong and substantially constructed. Has always been carefully kept up. First class condition throughout, subject to closest inspection. Well found for cruising. Will be sold at reasonable figure.



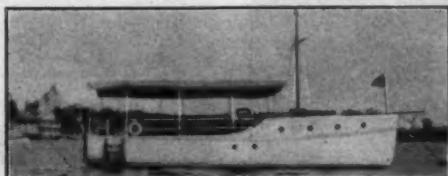
No. 3448.—For Sale or Charter.—111-foot twin screw express steam yacht. Speed 18 to 20 knots. One double stateroom. 2 transoms in main saloon and 2 in dining saloon. Triple expansion engines; watertube boiler. Electric lights. Steam heat. Ideal boat for making daily runs between owner's country home and the city.



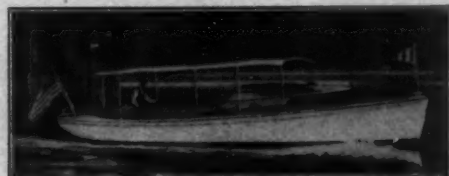
No. 2646.—For Sale.—Auxiliary sloop, 43 ft. 6 in. x 30 ft. x 8 ft. 10 in. x 6 ft. 3 in. draft. One of the popular New York Yacht Club Thirty-Foot One Design Class. Motor installed 1915. New Ratsey sails 1914. Complete cruising equipment. Everything in connection with the yacht and outfit in excellent condition.



No. 5144.—For Sale or Charter.—Trunk cabin cruiser, 40 x 9 x 3 ft. Built by the New York Yacht, Launch & Engine Company. 23 H.P. Twentieth Century motor. Cruising speed 12 miles. Well found. In excellent condition. Fine sail. Hull copper sheathed below waterline. Copper screws over all windows.



No. 5157.—For Sale.—Reasonable price. Raised deck cruiser, 35 x 10 x 3 ft 5 in. Built 1915. Cruising speed 9 miles. 3 cylinder 4 cycle 18 H.P. Palmer motor. Electric lights. Well found for cruising. Engine equipped with Rushmore self starter. Mahogany joiner work. An unusually comfortable cruiser.



No. 4241.—For Sale.—Hunting cabin day cruiser, 32 x 8.6 x 2.6 draft. Built by Seabury Company in accordance with their usual practice. 2-cylinder Mianus motor. Has extra large cockpit. Cabin 8 feet long. Toilet. Well found. Low price.

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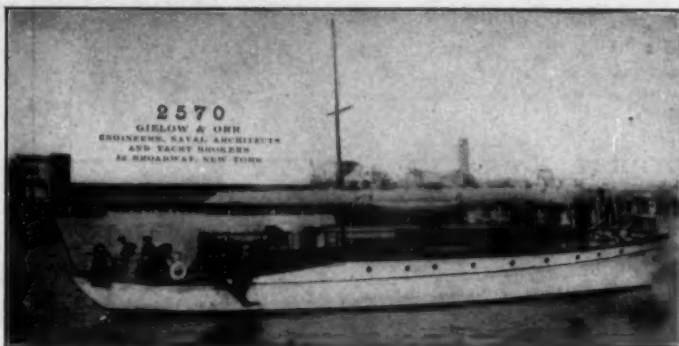
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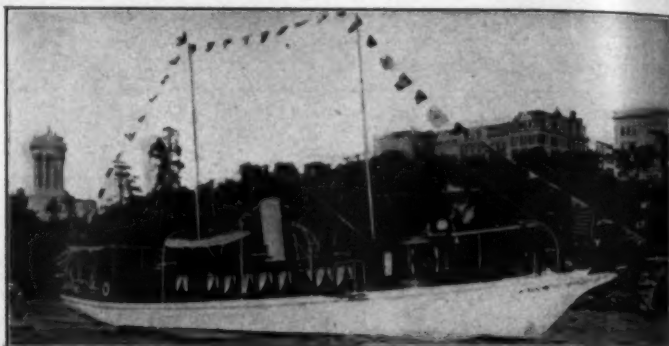
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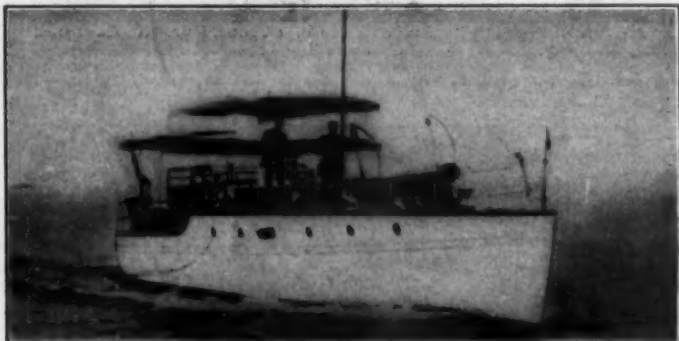
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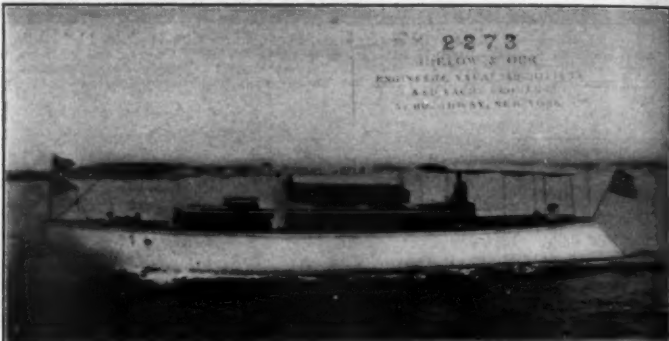
No. 2570.—For Charter.—Twin screw cruising motor yacht, 75 x 17 x 4 ft. draft. Speed 9/10 knots. 14 ft. saloon; 2 double staterooms; bath room. Electric lights. Ideal boat for cruising in any waters. Fine seaboard.



No. 395.—For Sale.—Glass cabin cruising motor yacht, 68 by 12 ft. 4 in. by 3 ft. 8 in. draft. New 65/75 H.P. Craig engine 1915. Boat steers from bridge (not shown on cut). Boat thoroughly gone over and all new upholstery 1915. Will be sold at reasonable price.



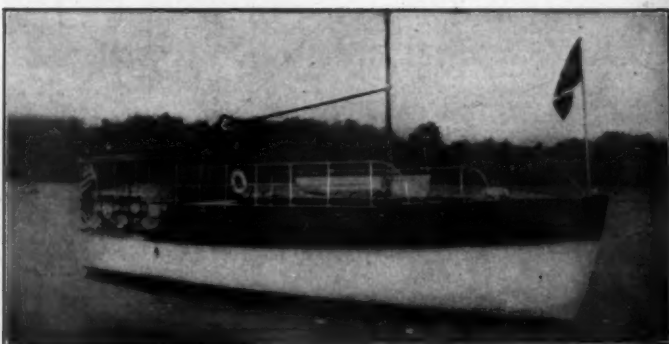
No. 3095.—For Sale.—Raised deck cruiser. Gielow design. 60 x 12 x 3.2 ft. draught; interior finished in mahogany with white ceilings. Accommodations for six and crew; three transoms in cabin; one double and one single stateroom, two toilets, two washrooms, crew forward. Lamb engine 40 H.P. Independent electric system. Carpets, curtains, cushions, awnings. Engine only used one season.



No. 2273.—For Sale.—32 ft. hunting cabin cruiser; good accommodations. Fine seaboard. Large cockpit. Strong and substantially constructed throughout. Mahogany finish. Craig engine with one man control at steering wheel. Copper fuel tank. Well found. Will be sold at ridiculously low price.



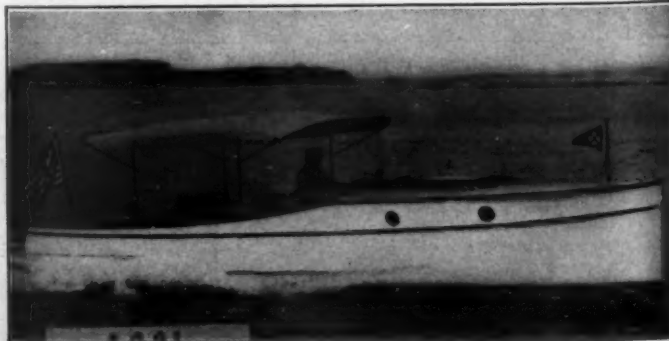
No. 3515.—For Sale.—Bridge deck cruiser, 47 x 10 x 3 ft. 6 in. Speed 11 miles. 4 cylinder 32-37 H.P. Standard motor. Double stateroom, tiled bath room. Large saloon. Electric lights. Fully equipped. Fine seaboard. Must be seen to be appreciated.



No. 5206.—For Sale.—46-foot raised deck cruiser, built 1914. 4 cylinder 5½ x 6 Sterling engine. Speed up to 12 miles. Large cabin and stateroom. All berths equipped with spring and hair mattresses. Excellent toilet accommodations. Large deck space. Excellent seaboard. Steers from enclosed pilot house aft. Electric lights and searchlight. Unusually comfortable. Very fully found. Price reasonable.



No. 5138.—For Sale.—One of the well known 35-foot Elco Express type motor boats. 6-cylinder Elco motor. Speed 24 miles. Mahogany hull and finish. Well found and in good condition. Reasonable price.



No. 5091.—For Sale.—Fast runabout, 28 ft. 7 in. x 6 ft. 3 in. x 2 ft. draft. Built 1914. Speed 18 miles. 4 cylinder 35 H.P. Sterling motor. Comfortable, able and exceptionally dry in heavy weather. Excellent condition throughout. Well found. Reasonable.

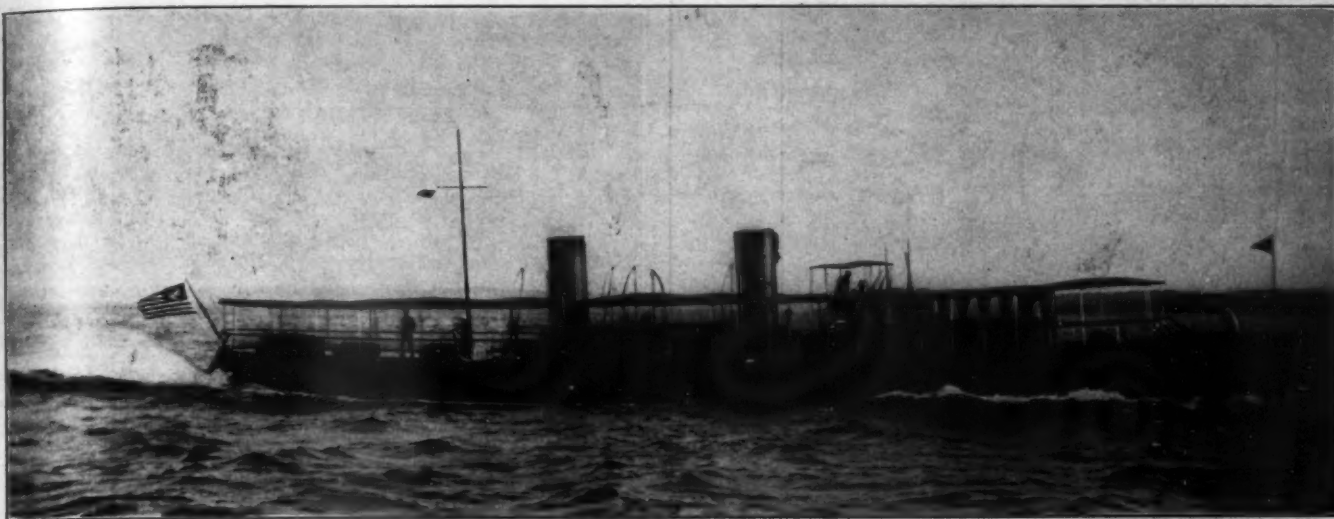
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Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR Boating.



No. 2167.—For Sale.—142-foot twin screw cruising express type steam yacht. Steel construction. Forward deckhouse contains dining saloon 22 feet long with pantry on port side connecting with same. Captain's stateroom at after end of forward deckhouse. Social hall and after deckhouse. Owner's suite consists of extra large stateroom full width of the vessels, with an unusually large bathroom. The main saloon below deck is 13 feet long, with transom on either side followed by double stateroom and another complete bathroom. Machinery consists of 2 four-cylinder triple expansion engines and 2 watertube boilers. Speed 18 knots. Yacht is in excellent condition, always having had the very best care and attention. Well found. To close an estate will be sold at a reasonable figure. Yacht has after deckhouse, not shown in photograph. Gielow & Orr, 52 Broadway, New York City.



RICE STOCK MOTOR BOATS: 16-foot Speed Boats; 19-foot Runabouts; 22-foot Auto Boats. State type interested in. Catalogue on request. Above cut shows 19-foot Runabout. Rice Brothers Company, East Boothbay, Maine.



No. 4100.—FOR SALE—34-foot fast day cruiser 50-60 H.P. engine. Speed up to 20 miles per hour. One-man control. Well found. Low price. Gielow & Orr, 52 Broadway, New York City.

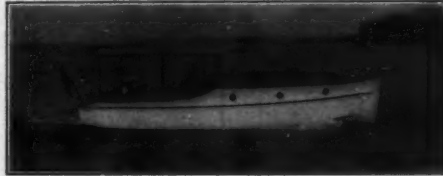
FOR SALE—Fairbanks, Morse 7 H.P. double cylinder marine engine. Run less than 1000 miles, \$45. Arnold Koehler, 1009 Center St., Joliet, Ill.

WANTED—A second-hand Elco Cruisette, 32 feet. Must be in good condition. State lowest price and present location of boat. Motor Boating, N.Y.C.

FOR SALE—26 ft. seaworthy motor boat, excellent condition. Full equipment, electric lights. Send stamp for full particulars. F. H. Lowe, 40½ West Main St., Meriden, Conn.

WANTED—Speed boat 25-30 feet or over, 20 miles or more. State price and full particulars. Frank Lalor, Globe Theatre, New York City.

FOR SALE—Wolverine 36 B.H.P. heavy duty 3 cylinder 4 cycle engine, 8 in. bore, 9 in. stroke, with reverse gear, in good condition and guaranteed. Frank A. Pfaff, 2713 W. 6th Street, Cincinnati, Ohio.



FOR SALE—To settle an estate. A raised sheer cruiser, designed and built by Nock, 1914. 28 x 8 ft. Two cylinder, 5½ x 6 in. Standard engine. Substantial construction. Yellow pine plank. Good size cabin, toilet-room forward with Sands closet and lavatory, complete outfit. Price \$1200. For particulars, address F. S. Nock, East Greenwich, R. I.



No. 2114.—For Sale.—Low price.—36 ft. glass cabin cruiser, built by Seabury Company. 4-cyl. 4½ x 5 Speedway motor. Bosch ignition. 2 cabins. Toilet, galley, electric lights. Mahogany finish throughout. Fully found including tender. Good condition and seaworthy. Gielow & Orr, 52 Broadway, New York City.

MULLINS 1916 BARGAIN LIST

We have a large stock of slightly shop worn boats, canoes, propellers, steering wheels, spark coils and other boat and engine equipment, all in excellent condition—good as new, but owing to change in our 1916 line, we are no longer using these particular items and these are being sold at less than actual quantity cost. Write today for prices as this is an exceptional opportunity. The W. H. Mullins Company, 1160 Franklin St., Salem, Ohio, U. S. A.

WANTED—Power cruiser, raised deck preferred, about 35 ft. long, fully equipped. Send full description, date built, make and model of engine with date, also photographs if possible, and state lowest cash price. Address Box 907, Meriden, Conn.

SNAP!—8 cylinder V-type engine, like new. BARGAIN. Ricordo, care of Motor Boating.

FOR SALE

40 H.P. Holliday 4 cyl. 4 cycle. heavy duty, good as new, complete.....	\$400
12 H.P. Holliday 2 cyl. 4 cycle.....	35
20 to 25 H.P. Smalley, good as new.....	150
20 to 25 H.P. Smalley, used one season.....	125
6 H.P. Perkins 1 cyl. 2 cycle.....	25
12 H.P. Wolverine 2 cyl. 2 cycle.....	35
10 H.P. Michels and Collins 2 cyl. 4 cycle, complete	75
5 H.P. Stralanger 1 cyl.....	20

JESIEK BRO., Holland, Mich.



\$47.50 for a limited time, we will sell these seventeen-foot stepless hydroplanes at the above price for complete knock-down boat, which includes mahogany interior and every piece of material necessary to complete the hull. Other models at proportionate prices. Write for circulars. HYDROPLANE CONSTRUCTION COMPANY, Point Pleasant, Kentucky.



No. 2775.—For Sale or Charter.—High class 60 ft. bridge deck cruiser. Finely finished and appointed. Large saloon, double stateroom, bath room, electric lights. 50/60 horsepower motor. Bridge control. Speed 11/12 miles. First class throughout. Gielow & Orr, 52 Broadway, New York City.

USE "SNAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

FOR SALE—27 ft. cruiser, brand new, latest style. Price \$600 for quick sale. James Wilde, Pearl River, N. Y.

CANADIANS. Second-hand engine bargains. Send for list. GUARANTEE MOTOR COMPANY, 73 Bay Street, North Hamilton, Ont., Canada.

FOR SALE CHEAP—26-foot, glass cabin boat, one year old with or without engine, also sample 10 H.P. Northwestern engine and outfit complete. G. C. Losey, 1010 Cass Ave., Grand Rapids, Mich.

BARGAIN—17 H.P. 3 cylinder 2 cycle, jump spark, Knox engine, Paragon gear, carburetors, propeller, thoroughly overhauled and in perfect condition, \$200. Address B. C. Bixby, Newton Center, Mass., or Camden Anchor Rockland Machine Co., Camden, Me.

THURMONT ROTARY WATER OUTRIGS at BELOW COST
 High grade power signals suitable for boats from 12 to 80 ft. Formerly sold for \$15.00, \$20.00 and \$30.00 now priced below cost.

No. 0—\$10.00. No. 1—\$15.00. No. 2—\$20.00.
 Run by friction contact with flywheel. Operated from any part of boat. An outfit that will outlast your boat. Order today.

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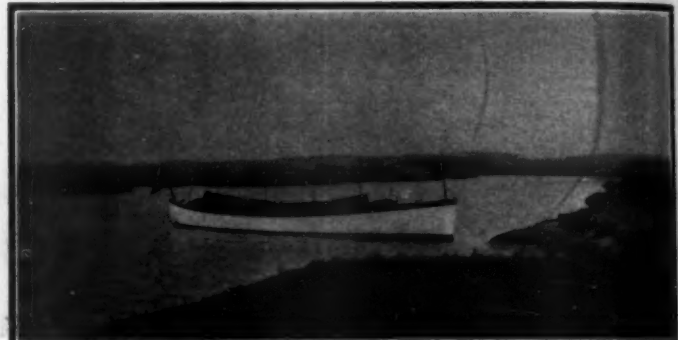
Cruiser, 60 ft. over all, 55 ft. waterline. Modern cabin plan with 2 double state-rooms and toilet room aft. Machinery under bridge deck. Dining saloon, galley and forecabin forward. Standard engine, absolutely reliable. Janney Steinmetz tanks. Independent direct connected electric light plant. 200 gal. fresh water. Equipment and cabin furnishings new 1915. Can be run by one man. Gasoline consumption exceptionally low. Fine seaboat and complete in every detail. Owner has purchased larger boat. For Sale or Season Charter. Inquire of Morgan Barney, 29 Broadway, New York.



FOR SALE—80 ft. express motor yacht. 8-cylinder Craig engine. Can disconnect four cylinders for cruising speed. Stateroom, saloon, dining room, galley, forecabin. Large cockpit. Bridge deck. Built by Herreshoff for Cornelius Vanderbilt. Inquire of Morgan Barney, 29 Broadway, New York.



FOR SALE—46-foot motor cruiser, 45 H.P. Holmes motor. Built 1913. Speed 12 miles per hour. Seen in Boston. Apply to Hollis Burgess Yacht Agency, 15 Exchange Street, Boston, Mass.



FOR SALE—Attractive motor boat, 36 feet long, 6 feet 8 inches beam. Built 1912. 3-cylinder 18 H.P. 1913-Campbell motor. Bargain price. Can be seen by applying to Hollis Burgess Yacht Agency, 15 Exchange Street, Boston, Mass.



MUST BE SOLD AT ONCE TO CLOSE ESTATE.—Able Sea-Going Motor Yacht; 62' x 12' x 3' 9". Well found and in excellent condition. Will demonstrate any time. First check for \$1,500.00 takes her. Davis & Child, 1110 14th St., N. W., Washington, D. C.

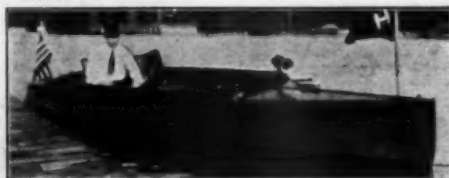
FOR SALE—Twenty-foot runabout. Ten horse, two cylinder engine installed under hatch forward. Good design. Speed ten miles. \$200. Address L. R. Cutler, Freeport, L. I.

FOR SALE—50 H.P. six-cylinder new motor. Cost \$1200. Will take \$600. Ridgely, 20 Broad St., New York.

ALUMINITE PISTONS FOR YOUR BOAT MOTOR—Will make a fast boat much faster—will make any motor run smoother and with less vibration. Write for quotation, giving name of motor, bore, etc. Green Engineering Co., St. Clair St., Dayton, Ohio.

BARGAIN—3-Cyl. Smalley Aluminum Speed Engine. 18-24 H.P. Complete Equipment, Reverse Gear, Stuffing Box, Strut, Bronze Shaft, and new propeller. Used one season. Cost over \$900.00. First check for \$425.00 takes her. Davis & Child, 1110 14th St., N. W., Washington, D. C.

WILL SACRIFICE Florida home, fronting Sarasota Bay 500 ft. and Gulf of Mexico. New house, 5 rooms and screened porch, flowing Artesian well, etc. \$3500.00 cash. Thos. McLaine, Osprey, Fla.



BARGAIN—Smart 18-foot motor boat; 6-8 H.P. Palmer 2-cylinder 2-cycle engine. Three years old. Hull light, but strongly constructed, canvas covered over planking. Mahogany decks and sternboard. Exceptionally fast for power. Inspectable at Hackensack Boat Club, Hackensack, N. J., any Sunday. Will accept \$150 for immediate sale. F. C. Vollmers, 30 Waverly Ave., Brooklyn, N. Y.

EXCEPTIONAL BARGAINS
 We have the following brand new solid bronze propellers, used for testing purposes, which we are now selling at less than actual cost, as follows:
 1 25" 3 B Cast iron propeller, 1¼" taper bore, threaded.....\$12.50
 1 Michigan 1¼" taper bore, 24 x 44" 3 B Bronze propeller.....16.15
 1 Michigan 1¼" taper bore, 24 x 42" 3 B Bronze propeller.....16.50
 1 Michigan Auto Speed 1¼" taper bore, 24 x 40" 3 B Bronze propeller.....16.15
 1 Michigan Auto Speed 1¼" taper bore, 20 x 32" 3 B Bronze propeller.....8.30
 1 Michigan Auto Speed 1¼" taper bore, 22 x 30" 3 B Bronze propeller.....10.85
 1 Michigan Auto Speed 1¼" taper bore, 20 x 24" 3 B Bronze propeller.....8.30
 1 Hartman, 1" bore, 15 x 30" 3 B Bronze propeller.....13.50
 1 Columbian, ¾" bore, 15 x 30" 3 B Bronze propeller, each.....5.30
 1 Columbian, ¾" bore, 16 x 28" 3 B Bronze propeller.....5.30
 1 Columbian, ¾" bore, 15 x 28" 3 B Bronze propeller.....2.70
 1 Bryant & Barry, ¾" bore, 15 x 28" 3 B Bronze propeller.....4.50
 1 Trout, ¾" bore, 18 x 30" 3 B Bronze propeller.....5.40
 1 Bryant & Barry, ¾" bore, 17 x 28" 3 B Bronze propeller.....5.65
 1 Columbian, ¾" bore, 16 x 28" 3 B Bronze propeller.....5.50
 1 Columbian, ¾" bore, 14 x 18" 3 B Bronze propeller.....2.15
 1 Norwalk, ¾" bore, 16 x 22" 3 B Bronze propeller.....2.90
 1 Columbian, ¾" bore, 15 x 22" 3 B Bronze propeller.....4.00
 1 Pierce, ¾" bore, 16 x 22" 3 B Bronze propeller.....5.10
 1 Norwalk, ¾" bore, 12 x 12" 3 B Bronze propeller.....1.45
 1 Hartman, ¾" bore, 20 x 20" 3 B Bronze propeller.....7.40
 1 Hartman, ¾" bore, 17 x 24" 3 B Bronze propeller.....5.30
 2 Norwalk, ¾" bore, 18 x 20" 3 B Bronze propellers, each.....2.40
 1 Michigan, ¾" bore, 16 x 24" 3 B Bronze propeller.....4.25
 1 Michigan, ¾" bore, 16 x 22" 3 B Bronze propeller.....7.40
 1 Columbian, ¾" bore, 18 x 24" 3 B Bronze propeller.....4.60
 1 Columbian, ¾" bore, 18 x 20" 3 B Bronze propeller.....5.30
 1 Columbian, ¾" bore, 14 x 12" 3 B Bronze propellers, each.....1.15
 4 Norwalk, ¾" shaft, 14" 3 B Reversible propellers, each.....19.70
 1 Norwalk, ¾" shaft, 16" 3 B Reversible propeller.....37.15

THE W. H. MULLINS CO.
 1160 Franklin St., Salem, Ohio, U. S. A.

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TOOSOON—Fast Thirty-five-foot Semi-Cruiser, Sixty Horsepower, Six-Cylinder Loew-Victor Engine, never stopped. Best construction. Good headroom. Has Toilet, Galley, Ice Box, Buffet, etc. Used two short seasons. Building larger boat. Will sell complete or hull only at low price. Richard Hutchison, Thirty-five Federal St., Boston, Mass.

STEERING WHEELS

Owing to change in our models, we have a stock of 98 16-in. Polished Brass Steering Wheels with hardwood handles, which we are willing to sell singly or in one lot, at less than actual quantity cost. Write us if interested. The W. H. Mullins Company, 1160 Franklin St., Salem, Ohio, U. S. A.

POSITION WANTED as engineer on motor yacht. Am familiar with the various powers up to 250 H.P. Reversible, Electric Lighting. Care of Storage Batteries. A-1 references. Address Engineer, care of Motor Boating.

FOR SALE—New Koban 3 H.P. Outboard Motor Battery Type, \$50.00. Or will trade towards a 2 cylinder 2 H.P., 2 cycle engine. L. D. Huber, 204 State Street, St. Joseph, Mich.

FOR SALE

2—28 H.P. 4 cylinder 4 cycle Clifton engines, 6¼ x 1. K. W. Ignition. Bronze propellers. All complete. In fine condition. Price \$350.00 each.
 1—30 H.P. 3 cylinder 4 cycle heavy duty Doman engine. Complete with bronze propeller. Used very little. In perfect condition. Price \$375.00.
 1—30 H.P. 3 cylinder heavy duty Fairbanks-Morse engine. Make and break ignition. In fine condition. Price \$300.00.

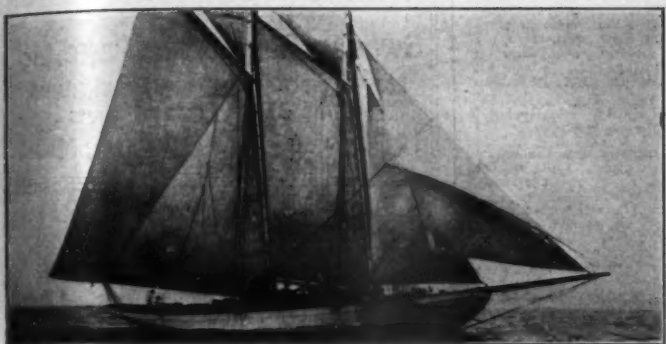
KAHLENBERG BROS. CO., Two Rivers, Wis.

THE MOTOR BOATING MARKET PLACE

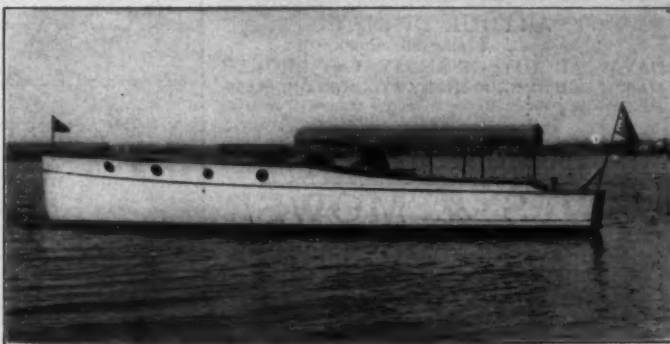
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UNUSUAL BARGAIN.—Keel auxiliary cruising schooner; 89 x 68 x 19 x 10 1/4 ft. Flush deck and cockpit. Three double staterooms, large saloon, bath, two toilets. Crew's quarters, two staterooms, six pipe berths, toilet, etc. Vessel in excellent condition, having had best of care. Very able and comfortable. Can be seen at E Boothbay, Me. **RICE BROTHERS COMPANY**, East Boothbay, Me.



FOR SALE.—Fine able cruiser (brand new) 40 ft. x 9 ft. x 3 ft. A beautiful job in figured mahogany and white. Complete elegant equipment. Sterling six-cylinder motor. Owner spent 2 years collecting finest material. Built day work. Specifications and price on request. Good car taken part payment. **H. A. Lord**, Ogdensburg, N. Y.

WANTED.—Competent man to act as engineer and general all-around man on a fifty-foot motor cruiser—twenty-six weeks' work—single man preferred. State experience. Address Box 15, care of Motor Boating.

\$2700—54 ft. absolutely new \$10,000 power yacht, \$900 cash. 35 ft. cruiser, \$275; 24 ft. cruiser, \$175; 15 ft. new seaworthy launch, \$35. **Modern Yacht Co.**, Dan, Me.

ELCO RUNABOUT.—Thirty-foot; forty horse; fully equipped, excellent condition. On account of no time to use her will sell for a very low price. **BIER**, 1496 Bedford Avenue, Brooklyn, N. Y.

FOR SALE.—20th Century four-cylinder engine, 40 H.P. heavy duty. 6 1/2 bore, 8 1/2 stroke. Thoroughly overhauled; jump spark ignition; forefeed oiler. Can be seen running. Price \$400. 625 Second St., Brooklyn, N. Y.

8 to 11 h.p. Fox engine, coils and propeller; fine condition; \$80.00. **Elmer Calkins**, Petoskey, Mich.

WANTED.—Modern cruiser about 40 ft.; speed, 10 miles; up-to-date. Cruiser, care MoToR Boating.

THAT'S DIFFERENT—

A mahogany 35 x 6 runabout with every improvement, piano finish, electric lights, electric self starter, self-regulating oiling system, windshield auto top, wicker chairs, all practically brand-new, complete equipment. This boat is the private property of **Wm. Bruns**, President of **Bruno, Kimball & Co.**, 115 Liberty Street, New York City, and never used or handled by any other person. It is just a little bit better than the regular boat of this type, normal speed, solid comfort and seaworthy. Never need oil coats as far as spray is concerned. Any child or lady can handle this boat in perfect safety under normal conditions. Sterling engine has one year guarantee. For further particulars address **WM. BRUNS**, 115 Liberty St., New York City.



Write for Catalogue "B" at Money Saving Prices EVERYTHING FOR THE MOTOR BOAT

THE "LITTLE GIANT" COMBINATION LIGHT



These are our latest inventions in Sailing Lights for classy runabout motor boats.

Bow Light is complete with a 6-volt, 4-c.p. Tungsten bulb.

Bow Light is mounted on a detachable socket which can be used as a flag pole socket when lamp is not in use.

Light, complete as illustrated, extreme height, 10 in.; width, 4 1/4 in. Cash Price.....\$6.95

The electric Stern Light is especially designed for Class 1 and 2 boats. Made of polished brass and fitted with 6-volt, 4-c.p. Mazda bulb. Can be detached from pole instantly. Light complete with 5 ft. wire and Deck Socket. Cash Price.....\$3.95

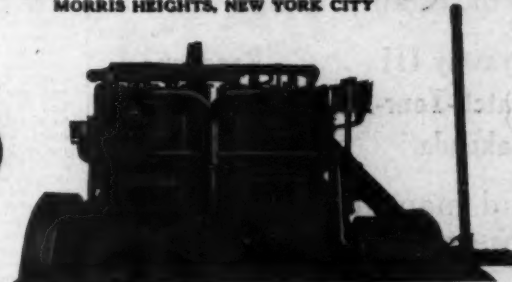
"LITTLE GIANT" ELECTRIC STERN LIGHT



E. J. WILLIS CO. - 85 Chambers St., New York

New York Yacht, Launch & Engine Co.

MORRIS HEIGHTS, NEW YORK CITY



Builders of
20th CENTURY MOTORS

12 H. P., 2 cylinder, to 100
H. P., 6 cylinder
Send for catalogue

Builders of
YACHTS

of all description
Let us figure on your new boat

Berling Magneto



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Built to
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marine
conditions

ERICSSON MANUFACTURING CO. 1148 MILITARY RD., BUFFALO, N.Y.

D for **DOMAN** Dependable and Durable

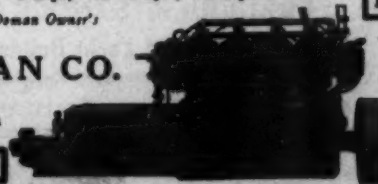
Are you a judge of marine motor values? Then send for our catalog. Go over the matter of valves, cylinders and piston stroke, magneto, oiling system, carburetor, reverse gear—in fact, any detail you wish. The more you know about marine motors the more you will appreciate **DOMAN** construction and equipment.

High-Speed, Medium or Heavy-Duty types for salt or fresh water—2-cyl., 6-h.p., to 6-cyl., 90-h.p.

Send for catalog and the Doman Owner's Book today.

H. C. DOMAN CO.

Dept. C
Oshkosh, Wisconsin



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NAVAL ARCHITECT AND YACHT BROKER
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Rebuilt Engines backed by a strict Guarantee

Bruns, Kimball & Co., 115 Liberty Street, New York City, offer over 200 rebuilt engines, fully guaranteed, at exceptionally attractive prices. List will be sent free for the asking. Your present engine will be taken in part payment for a new Sterling, Kermath, Missouri, Hermann 4 cycle, Eagle, Hubbard, Northwestern 2 cycle. Write for offer.

COX & STEVENS

Engineers and Naval Architects
Yacht Brokers

15 WILLIAM STREET, NEW YORK CITY
TELEPHONE 1375 BROAD

HAND V BOTTOM

The type which has affected modern power boat design more than any development of the century.

Flyaway III Raccoon
Watch-Your-Step Romany
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and many other famous boats of the past few seasons.

Send stamp for illustrated catalog.

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Designer of Sail and Motor Boats

120 Broadway

New York

FREDERICK S. NOCK

Naval Architect and Yacht Builder

Marine Railways, Storage, Repairs

EAST GREENWICH RHODE ISLAND

Building an 18-Foot Runabout

(Continued from page 23)

After locating and boring the hole the shaft log should be considered, and while the ordinary wooden log with the inboard bolted-on stuffing box will fulfill requirements, it is hardly to be compared with the patented self-aligning metal logs, and the latter type of suitable size should be installed.

Now get out the forward and after deck beams and hatch frames, which should be sawed to crown after scaling the drawing. This is simple work and needs no further comment. With the beams in place proceed with the deck, utilizing the remnants of the planking where possible and making neat joints on seams where the strips come together. When all is covered, plane down and sandpaper perfectly smooth in preparation for the canvas covering.

The canvas should be laid in thick white lead paint or marine glue and stretched tightly over the deck surface. Fasten down with copper tacks spaced very close. When the deck is covered dampen the entire canvas surface slightly and immediately apply a coat of thin paint. When the canvas is dry you are ready to fit the coaming.

As shown in the arrangement plans the coaming is practically straight, with the forward portion crowned to conform to the radius of the deck. This style is quite easily fitted and looks well; moreover, it is easily replaced should it become damaged through accident.

All that remains to be done to the hull itself is the completion of the cockpit. The flooring, sheathing, seat installation, etc., are all too easily accomplished to need detailed instructions.

The entire finishing up, such as painting, varnishing, trimming, etc., is left to the discretion of the builder, as no two will desire this just the same. However, give this due consideration before proceeding, for upon the last touches depend the appearance and pleasing effect of your outfit.

Having gone this far you will have no difficulty in attending to the minor parts mentioned here, but for those who intend to construct their own details of equipment such as strut, rudder, etc., the sketches of these parts offer suggestions for carrying out the work.

The remainder and perhaps best of it all is to be of your own planning; first, and quite important, too, just what you will name her; then just how and when you will launch her, and last but not least, the good times she will bring you.

EDITOR'S NOTE: Correction is hereby made to an obvious error which crept into the February installment of Mr. Bradley's article on page 13. On this page a sentence read, "The keelson should now be prepared from a straight parallel oak piece 4 inches wide by 7 inches thick." The second dimension should, of course, have been 3/4-inch thick.]

Installing a New Shaft Log

(Continued from page 29)

shaped with the axis of the hole parallel to the lower edge. This would allow of its being tightly driven into the space cut out for it and leave its inboard end the same size as the old one. The top of the log (AB, Fig. 2) would be the same as the old one, (AB, Fig. 1), so it was required to cut the keel down along the line CE, Fig. 1. Great care was taken to make this cut perfectly straight and square with the keel and considerable trouble was experienced in doing this at the inboard end on account of the planking being in the way.

The new shaft log (ABCE, Fig. 2), was then made. It was built up of two pieces (Fig. 3), each piece being machined out half round for the shaft hole which was two inches in diameter. The pieces were bolted together with bolts running through each side of the shaft hole and two soft wood battens were inserted in red lead before boring for the bolts in order to make a water-tight joint. After the log was fastened in place a lead pipe was swelled tightly into the shaft hole.

The log being completed, the edges of the keel and deadwood above it were painted with red lead and the log driven tightly into place. It was fastened to the keel by long drift bolts as shown in Fig. 2, holes being bored for the bolt heads through the upper half of the log and then plugged up. Other drift bolts were driven down into the log from the deadwood, and where possible through bolts were used as at XX, Fig. 2. An oak skeg was fastened under the after end of the keel as shown and a new stern post fitted.

A very important item was the insertion of stopwaters where the planking crossed the joint made by the keel and shaft log and the shaft log and deadwood. These were soft wood plugs driven through the log to prevent water from working along the joint and into the hull. It was difficult to fit these properly with the planking in place and the best that could be done was to bore directly under the edge of one plank and have the hole rise enough at the other side to come out directly in the middle of the opposite plank but not to cut into the plank.

This installation has been in the water four years and no trouble has resulted.

H. H. PARKER, Oakland, Cal.

The Maine Coast

(Continued from page 10)

anchorage and a chance to get ice, water and provisions, and the club is always courteous to visitors. As with all large cities, however, there are all-night whistles, steamer washes and other sleep-defying combinations. Many, therefore, prefer anchorage across the harbor at Peaks Island, where a young Coney Island holds forth. Then comes the trip down through Casco Bay, weaving in and out among the islands where innumerable summer colonies nestle. There is plenty of water everywhere with constantly changing scenes and many places to stop at, making Casco Bay an ideal cruising ground for small boats. Beyond the bay and deeply indenting the coastline are primitive Quahog Bay and the New Meadows River. After passing Cape Small, you will catch sight of Seguin Island looming up ominously seaward, guarding the mouth of the Kennebec River. You may turn Pond Island Light and steer up the Kennebec to Bath, a distance of twelve miles, wisely planning to run with the tide, if you would save gasoline. At Bath the Kennebec Yacht Club will extend its welcome and here you can pace more stock up your larder.

The next run is probably the most famous of all—

(Continued on page 64)

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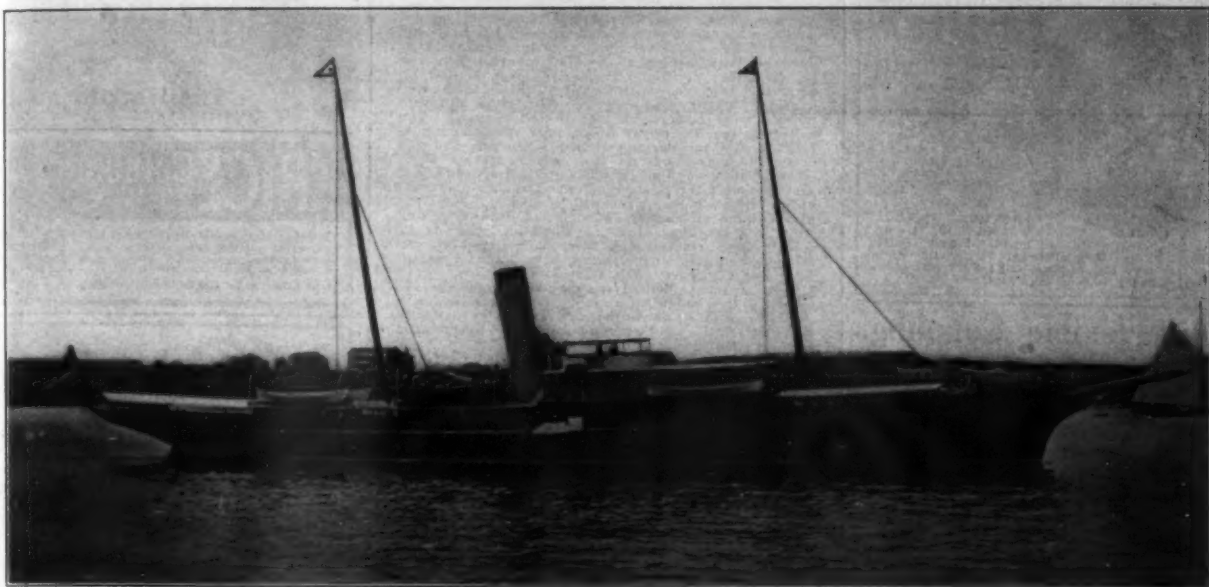
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Steam Yacht "May," Master, R. M. French

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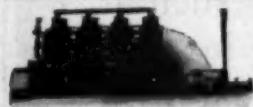
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4 HP. to 250 HP. KEROSENE
AMERICAS QUALITY SMALL MARINE MOTORS OLDEST ENDURES GENERAL CO.
1718 TRUMBULL ST. BAY CITY, MICH.

The Maine Coast.

(Continued from page 62)

the Back River from Bath to Boothbay, a distance of twelve miles, very narrow and tortuous, but deep and beautiful beyond description, with innumerable little nooks in which to anchor. On this trip you will negotiate the two Hell Gates, and if you do not run with the tide you will certainly think them well named. Many a good craft has here stood still with throttle wide open until the current changed. You will cross the Sheepscot River, scan your chart carefully to find the opening on the other side and run down through Townsend Gut, which appears about thirty feet wide and is thirty feet deep, and will probably meet the steamer at the narrowest point and wonder how far inland you will be washed. Here you pass through an ancient and defunct drawbridge and slide into Boothbay Harbor. Boothbay, with its famous island resorts and adjacent waters—Squirrel Island, Southport, Burnt Island, Bayville and Linekins Bay is real Maine.

If your time is limited you may shorten up the distance to this point by running on successive days, Marblehead to Little Harbor, N. H., to Portland, to Boothbay, or if night running suits you—by taking a bee-line from Marblehead to Boothbay.

The next interesting point is Christmas Cove, six miles beyond Boothbay and located on the Damariscotta River. The Cove is a nearly land-locked basin, large enough to moor any ordinary yacht, with from six to fifteen feet depth, and surrounded by the most attractive circle of cottages, rocks and dense groves of pines and spruce. The air is laden with an aroma of salt breeze and balsam. There are pretty walks ashore, tennis courts, a swimming pool and a casino run by the cottagers—with frequent dances. Here you will find delightfully democratic people from all parts of the country, and he is a peculiar yachtsman who will not make friends here and put Christmas Cove down as an annual port of call.

A few miles beyond are Muscongus Sound, Friendship, the Georges River and Port Clyde, all quaint and attractive and well worth visiting if you have time, but if not, a day's run will take you along a somewhat protected coast, through Muscle Ridge Channel, out by Owl Head and across six miles of open water to Camden. The Camden Hills will loom up higher and higher as you approach, until they tower over Penobscot Bay in profound grandeur. Camden is a rendezvous for the largest yachts and, in its aristocratic pretentiousness contrasts sharply with Christmas Cove. Here is a fine yacht club with courteous attendants and excellent facilities to replenish stores and haul out for repairs if necessary.

A climb to the top of Mt. Battis is well worth the effort. The panorama of land and sea, islands, rivers and mountains is impressive beyond words. Penobscot Bay offers a month's pastime in itself. Islesboro, Dark Harbor, Killeby Harbor, North Haven, Vinal Haven, Castine and Belfast should all be seen, but are beyond the scope of any single cruise.

Pushing on, you may run up around Islesboro, across East Penobscot Bay, possibly stopping at Bucks Harbor, a cordial little port, down Eggemoggin Reach, through Casco Passage and Blue Hill Bay, by Bass Harbor Head and into Northeast Harbor, Mt. Desert. Here the mountains are higher, the highest in fact on the Atlantic Coast, and the scenery the most wonderful of all. Even if you have to sacrifice a trip to Bar Harbor on the other side of the island, do not fail to run up Somes Sound to Somesville, where, at the old Somes Homestead you may partake of a chicken dinner that dates back to 1776 (not the chicken), when the Somes first settled Mt. Desert Village, and put up a sawmill which still stands and turns out the local supply of lumber.

Somes Sound cleaves the mountains at the highest part of the range and extends into the island, do four miles. The narrowest point is less than a quarter mile across, and if you put your bow ashore there will be fifty feet of water under the rudder.

Bar Harbor, second only to Newport as a summer retreat for the wealthy, faces Frenchmans Bay, and while not boasting a particularly good anchorage for small boats, the town is calculated to impress the visitor by summer homes so exclusively secluded that naught but pretentious gateways are visible from the highroads.

East of Mt. Desert, there is sixty miles of coastline to Eastport, Passamaquoddy Bay, New Brunswick and thirty-foot tides. Few yachtsmen venture beyond Bar Harbor, but if you want to get beyond the beaten track with real thrills and primitive country, keep going.

Any well equipped 25-footer may cruise from New York to the easternmost point of the United States, via the Cape Cod Canal, with perfect safety.

This article is intended, only briefly, to describe the principal points of interest. No real yachtsman is satisfied to have his cruises planned for him. Invest in a set of charts and lay out your runs; for the Maine Coast is the yachtsman's paradise.

Trade Literature Received

(Continued from page 44)

of the various models of this line. V-Ray literature is nowadays made distinctive by the checker-board design which the manufacturing company adopted a short time ago.

The new catalog issued by the W. H. Mullins Co., of Salem, O., is, among other things, a distinctive credit to the art of printing. It is done in blue, black and gold, and the pictures approximate as nearly as can be done on paper the many delights of motor boating. In text matter the catalog is fully up to its pictures and type, and the features and advantages of Mullins standardized wooden boats including the Arrow and Dixie Flyer models are set forth in a most convincing way. Altogether, this catalog is one well worth having.

The Anderson Engine Co., of Chicago, Ill., has just issued an attractive folder giving in a concise way prices and general dimensions of the complete line of fifteen Anderson engines. In addition to the specification table, the folder gives a mechanical description of the principal parts and features of these motors and also a few photographic reproductions of Anderson powered boats.

Each monthly issue of The Herd, a little house organ brought out by the Buffalo Gasoline Motor Co., of Buffalo, N. Y., has seemed to us better than

(Continued on page 68)



Motor Satisfaction

Comes to every user of Watkins Special Motors. Especially fine for engine and light boats.
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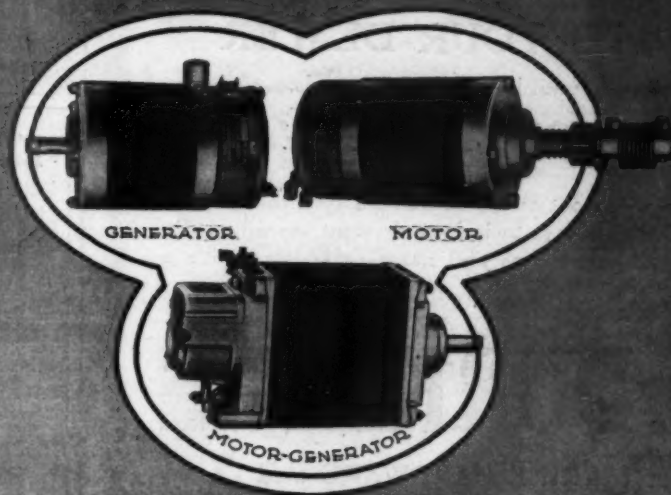
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Special No. 1, \$15.00 Model E : : \$20.00
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from our patterns of knock-down frames. You save 1/2 the cost and enjoy the work. Patterns and frames for boats of all types and sizes, from the canoe pattern at \$1.75 to the 65 ft. rack frame at \$350, and a full line of heavy built commercial boat frames.

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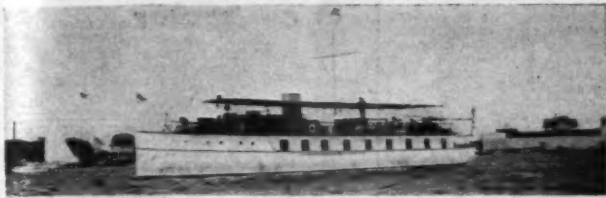
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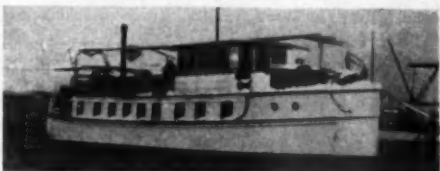
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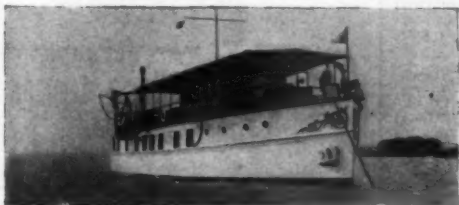
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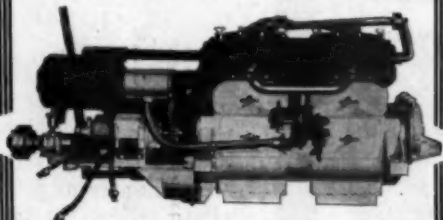
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Chicago Examiner**

Room 221, Hearst Building, Chicago, Ill.

Trade Literature Received

(Continued from page 64)

the one preceding it, and has taught us to expect from the Buffalo catalog something out of the ordinary in marine engine literature. The 1916 catalog of Buffalo engines has more than confirmed our suspicions that they have a publicity manager up there who knows his business. The Buffalo Book, as it is called, consists of thirty-odd pages of text matter descriptive of the Buffalo line, illuminated with halftone illustrations. These illustrations in themselves contribute no small part to the attractiveness of the catalog, as they are set off with Ben Day background, while the construction and mounting of the various articles of engine equipment is made clear in certain cases by toning down the engines themselves and thus bringing the kerosene converter, electric starter, bilge pump or what not into prominence. Another unusual feature consists of four imitation blue prints, showing sectional views of various Buffalo models as well as horsepower curves for the complete line.

The Ferro Machine & Foundry Co., of Cleveland, O., has just issued an attractive catalog covering the complete line of two- and four-cycle marine engines and rowboat motors manufactured by this concern. The two-cycle line consists of eleven engines ranging in size from 3 to 25 h.p., and there are three models in the four-cycle line as follows: 10-14 h.p. four-cylinder motor for light pleasure craft, a 20-35 h.p. enclosed four, for cruiser work, and a 35-50 h.p. six for heavier service. Especial emphasis is laid on the 10 to 14 h.p. model which has just been put on the market. This machine is noted for its simplicity of construction and the accessibility of its parts.

The Marine Compass Co., of Bryantville, Mass., has just sent us a copy of its new catalog of Polaris compasses and nautical instruments. Some of the leading items of the Marine Compass Company's line are the Cole Course Protractor, the Perfect underlighted compass and the Cole bearing finder. This bearing finder which was exhibited at the New York Show this year for the first time is declared to be of especial value to the motor boatman, as with it bearings can be taken to one-eighth of a point in average weather.

We have received from the Automatic Machine Co., of Bridgeport, Conn., a copy of its new catalog of Automatic marine engines. This deals with the new enclosed models which are declared to have met with instant appreciation and success. The enclosed models are made in four- and six-cylinder sizes, ranging from 30 to 150 h.p., and having cylinder dimensions of 5 x 7, 5 1/2 x 7, 6 1/2 x 8, 7 1/2 x 9 and 8 1/2 x 10 inches.

One of the most recent folders put out by the Sterling Engine Co., of Buffalo, N. Y., is Sterling Picture Stories, an attractive booklet illustrating twenty-one motor boats of various types which have been successfully powered with Sterling engines. Some of the more famous boats illustrated are Miss Detroit, Kiota III, Herman Oelrich's 26-foot Cinderella and the Whitaker Whizzer. Long captions under the pictures describe the boats and the motors in them and relate as well the results obtained from these engines. Other Sterling literature which has found its way to this office includes a description of the eight-cylinder model F motor for heavy express service and a general résumé of the Sterling line printed in Spanish and Portuguese.

Recent literature compiled by the Van Blerck Motor Co., of Monroe, Mich., which has been forwarded to our office includes a treatise on gear reduction as developed for use with high-speed Van Blerck motors, and Bulletin 24, which is generally descriptive of the Van Blerck line. The former of these folders contains an article by Morris M. Whitaker on the subject of reducing gears and another by Rex W. Wadman on the launching of Florence IV, the first cruiser to which this principal was applied. Bulletin 24 gives in an attractive manner the information which a motor boat enthusiast desires to know about his prospective power plant and includes halftone illustrations, some of which are cutaway views to drive the facts home.

The Oshkosh Marine Supply Co., of Oshkosh, Wis., has recently sent us an interesting catalog of its line of marine hardware and supplies. This concern carries an unusually complete assortment of material of all kinds necessary to the well-being and happiness of the motor boatman, and one's marine wants would have to be very unusual indeed if they could not be satisfied from the pages of this catalog. Among the attractive features of this booklet are a glossary of nautical terms in common use, a reprint of the motor boat laws and other information of value to the navigator.

The Upson-Walton Co., of 1310 West Eleventh street, Cleveland, O., has just issued its 1916 catalog on marine hardware. This will be of special interest to the dealer and boat builder, as it gives full descriptions of all the articles commonly used in the marine trade. The catalog is larger than ever before and covers a more complete line. Two whole pages have been devoted to this company's patented No-Bind stuffing box and strut.

The Motor Boat & Auto Supply Mfg. Co., of Cincinnati, O., has recently sent us its new catalog having to do with Gene V boats in K-D, semi-completed and finished and equipped hulls. A very full line of motor boats is included under the Gene V trade name, there being runabouts, cruisers, hydroplanes, rowboats, work boats, etc. The catalog is an unusually attractive one, well illustrated.

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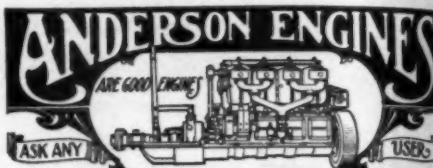
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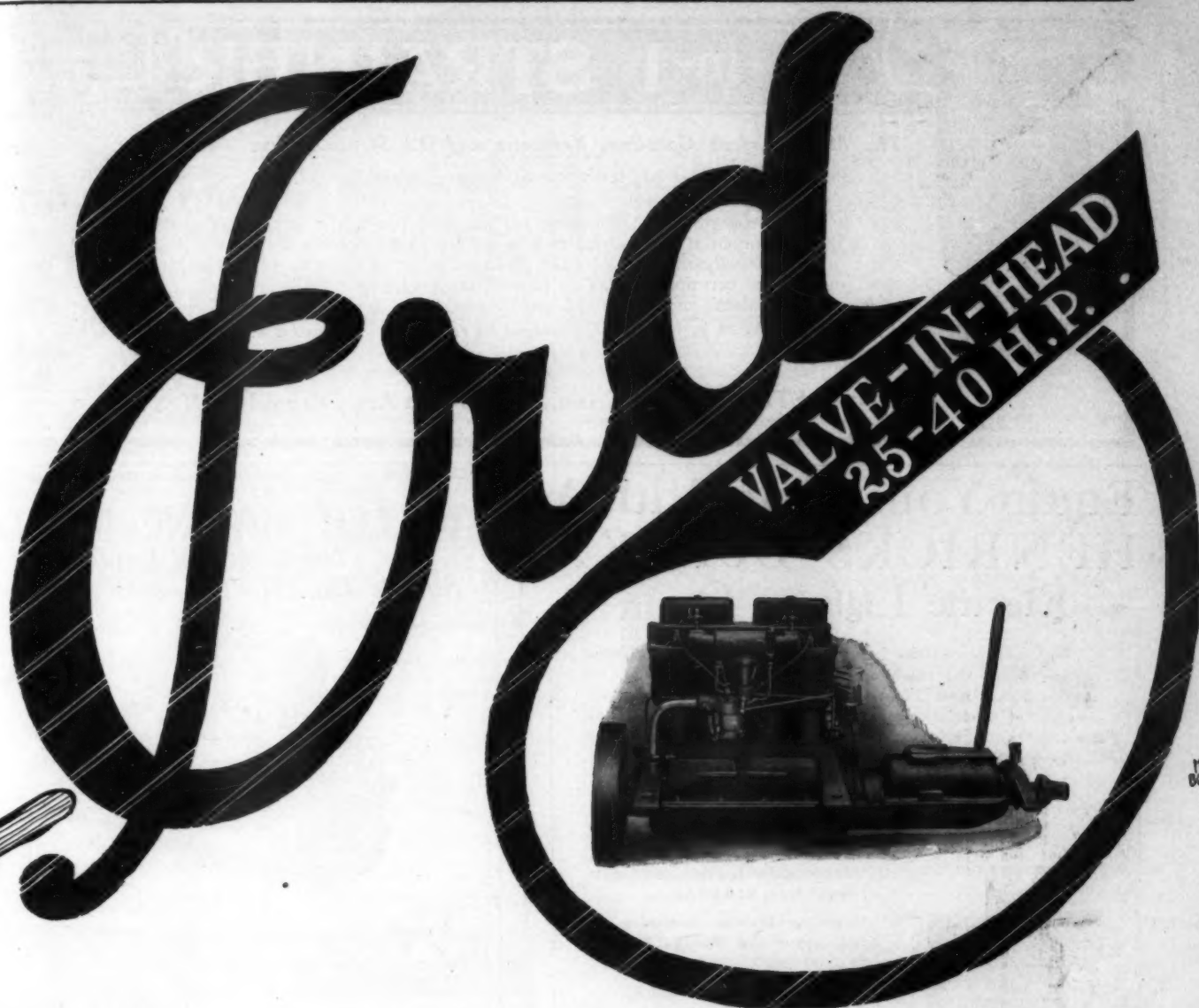
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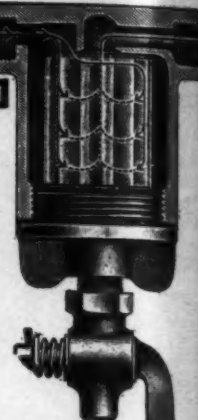
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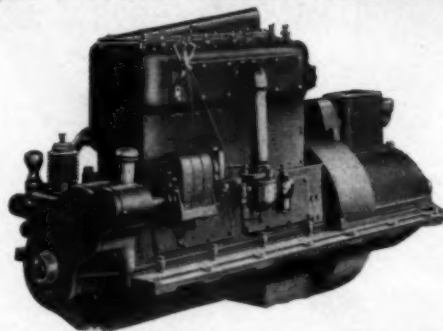
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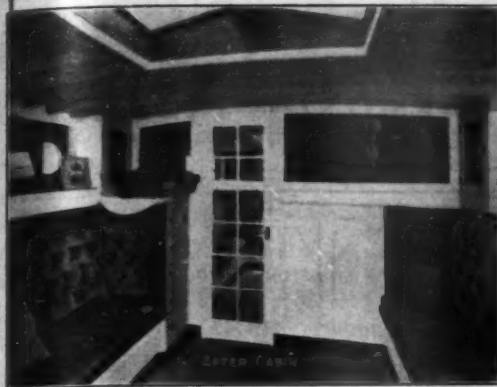
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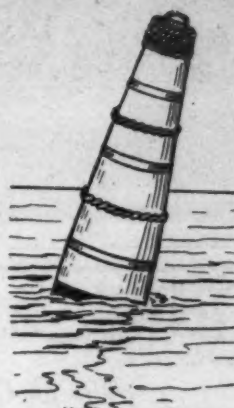
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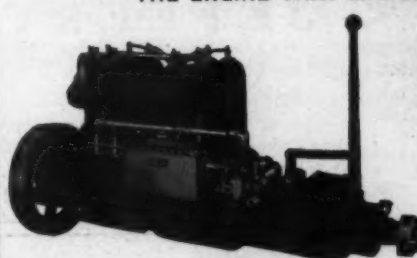


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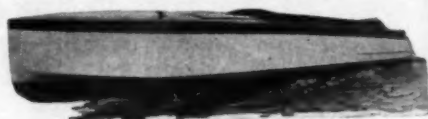
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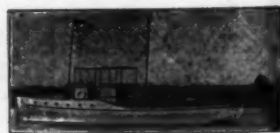
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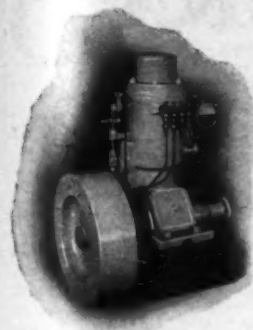
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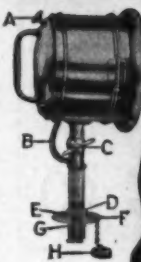
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Original in Design
Superior in Quality.

known by all
users as the
better Magneto

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THE "CAPITOL"

4 Cylinder

4 Cycle

MARINE MOTORS

MODEL H-4 3 1/4 x 5 1/4" NOMINAL RATING, 24 H.P.

In this motor we have succeeded in retaining the valuable features of our larger models of the well-known Capitol Motors, and have produced a popular-sized engine of medium low price, with extreme simplicity, reliability, quietness and a power curve that is second to none.

\$480 WITH COMPLETE EQUIPMENT

HA-4, Nominal Rating, 32 H.P., \$540

Write to-day for Bulletin H-4.

We also build motors of 12-15 H. P., 24-30 H. P. and 40-50 H. P.

AUTO ENGINE WORKS, St. Paul, Minn.



FOR CRUISING YACHTS,—you must have a clean, hard, slippery surface under water. A foul underbody often reduces speed 50% and doubles the cost of running.

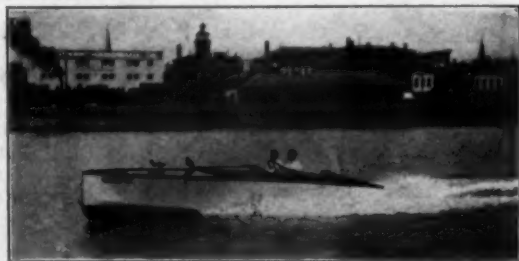
Marblehead Anti-Fouling Green or White has a hard, smooth finish, it lasts a long time and it stays clean. It is a powerful wood preservative, saves heavy expense for hauling out, re-painting and repairs, and it covers twice the surface, cutting the first cost in half.

ON STEEL YACHTS, it is not a copper paint and has no galvanic action in the salt water; this is of the first importance on metal bottoms.

FOR RACING,—it takes a wonderful hard, slippery polish and helps you win the race.

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A BEAUTIFUL boat built for Service, Speed and Comfort. This is just one of the many successful "VALLEY" Boats. We have a very complete line of boats to choose from and if our stockboats do not suit your requirements we can furnish a special boat. We have 14 and 16-ft. Outboard Motor Rowboats in stock, and due to the selected material from which they are built, their lightness, strength, design and handsome appearance, they are in a class by themselves. We are building our share of the finest boats. Let us know your requirements and we will recommend a "VALLEY" Boat to fill them.

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RIVER STREET
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The Motors That Never Backfire

NOTED FOR THEIR

Absolute Dependability

UNDER ALL CONDITIONS

Speedy Light Powerful Durable Economical

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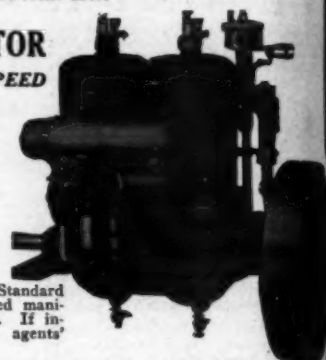
Buy a Roberts, and get the most efficient, up-to-the-minute motor ever offered to motorboat owners.

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NEW ROBERTS MOTOR

1916 MODEL 2-0 MORE SPEED

2 cylinder, rated 6 H.P., guaranteed to develop 8. Roberts motors have always been good; this year's line is 50 per cent better than ever before. This new engine is right up to the top mark of power and speed. Will make higher speed or run at lower speed than any other 6 H.P. Engine we know of. Lightest in weight for the power developed. Few moving parts. Horizontal float feed carburetor. Standard aluminum intake and water-jacketed manifold; \$110 complete. Order yours. If interested in a good seller, get agents' proposition.



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That it's a Racine^{wis}

is all you really need to know about the cruiser you buy.

Behind this name lies the skill of twenty years of boat designing and building. Racine^{wis} cruisers and motor boats are

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—by foreign governments, by institutions and individuals at home and abroad. In all Racine^{wis} boats you will find safety, comfort and luxury—combined with speed, power and dependability.

Write for catalog of cruisers, speed and semi-speed family launches, motor boats, rowboats and the famous Racine^{wis} canoe. Mention your preference when writing.

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COMMON SENSE SPARK PLUGS



A combination of three distinct features:

India ruby mica insulation—

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Makes the SPLITDORF PLUG unbeatable.

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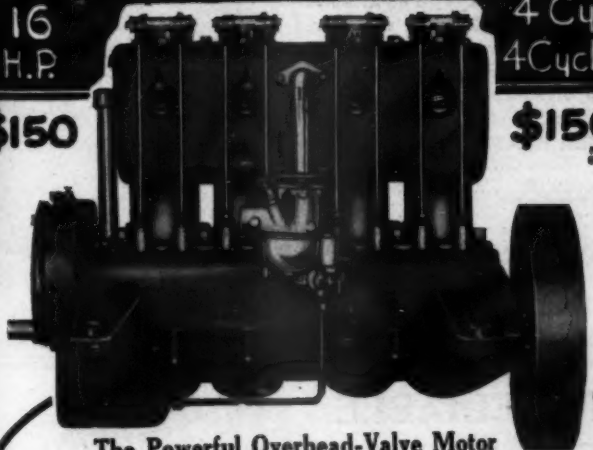
MORTON

16
H.P.

4 Cyl.
4 Cycle

\$150

\$150



The Powerful Overhead-Valve Motor

If you know good motor engineering when you see it, you will be surprised at the thorough quality we have been able to build into the 1916 Morton Motor at \$150. Not only in the design, but also the materials and workmanship, you will find that only the best of everything has been used. Our long experience in producing vital motor parts for high-grade automobile manufacturers is a guaranty of our ability to produce as good a motor as you want to own.

Overhead Valves One-Piece Camshaft
Block Cylinder Casting Bore 3 1/2", stroke 4"
Intake Passage in Cylinder Four-Cylinder, Four-Cycle
Block

If you have a fast launch or runabout, hydroplane, or cruiser, write today for full information on the 1916 Morton Motor.

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(Patented)

In the speed bearing world, "NORMA" stands for dependability. Therefore—when you adopt "NORMA"-equipped ignition, lighting and starting apparatus—you will introduce in your equipment an element of dependability which will add to the saleability and service quality of your engine or boat. The records of hundreds of thousands of "NORMA" Bearings in hundreds of thousands of electrical accessories, prove this.

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Ball, Roller, Thrust, Combination Bearings

The Pioneer PALMER MARINE ENGINES

You can buy a Palmer Engine of any type with the assurance that you are buying real service and genuine satisfaction. We are one of the oldest and most successful engine builders in the industry.

Palmer Engines are pioneers and leaders in every field. We built the first successful two-cycle engine made in New England. We have been building four-cycle motors for sixteen years. Every Palmer engine we have produced has been so good that we have never had to discontinue a model or a general type, merely adding improvements from time to time to keep our standard models a little ahead of the others.

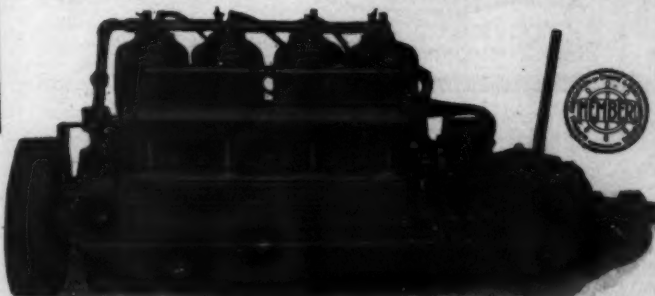
Our leader for 1916 is a 10 H.P., four-cycle, bore 5, stroke 6, multiple disc clutch built on as a unit, price \$300, known as Model NR2.

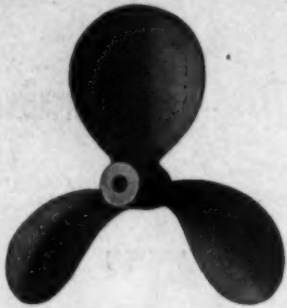
35 Models 2 to 50 H.P.	Two-Cycle and Four-Cycle Types.	Palmer Launches and Cruisers,	16 to 42 feet in length.
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TRADE MARK
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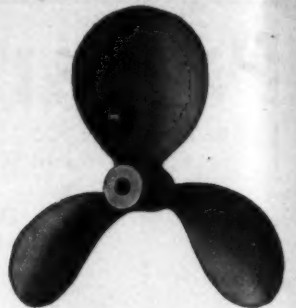
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PROPELLERS

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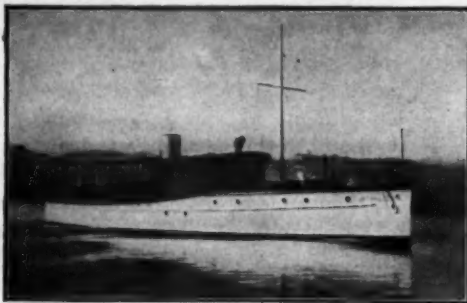
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"Speedway"

A Name Denoting Excellence

The name "Speedway" can mean but one thing—the best boats built. But while "Speedway" always implies the highest quality, it never means paying a higher price for a boat than it is actually worth.

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FOR NEXT SEASON**

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Built for a Purpose—

The Cape Cod Power Dory isn't a fancy show boat, nor is it a common type such as any old builder can produce. It is an open sea boat that will live in the roughest kind of water, riding the waves and surf like a cork. The safest, roomiest, sturdiest, most seaworthy type of boat built. The 17-ft. launch, shown at the right, is a practical and safe family boat of beautiful lines and shallow draft. It accommodates half a dozen persons with comfort. The motor, which is a little aft of amidships, is completely covered, yet it is readily accessible for starting, adjustments or repairs.



25-Ft. Special Dory Launch, "Rides the Sea Like a Duck, But Never Dives."

A FEW OTHER BOATS WE BUILD

35-FT. CABIN CRUISER	Folder 100
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And many other small boats not listed above.
Write today for full information



Cape Cod 17' Launch.

CAPE COD POWER DORY CO., 455 Main Street, Wareham, Mass.

RALACO
THE SILENT ENGINE

**FOR EFFICIENT, RELIABLE
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THERE ARE NONE BETTER.**

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10 to 75 H.P.—2 to 6 cylinders

THE S. M. JONES COMPANY

TOLEDO, OHIO, U. S. A.

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Preparedness

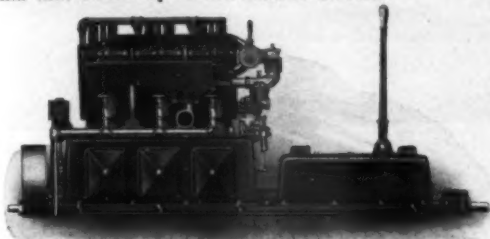
PREPAREDNESS is as good a slogan for a boat owner or a business man as it is for a nation. Being prepared for the unexpected is the best insurance against future trouble.

You will be prepared for the worst—for the hardest service and most severe operating conditions possible to imagine—if you equip your boat with a

WRIGHT HEAVY DUTY ENGINE

The Acme of Dependability

A high grade overhead valve type motor that gives unusual power for its bore and stroke. It has the quality and the stamina that stands up in the hardest service.



Wright Three-Cylinder Kerosene Engine

6 1/2 x 7 1/2".....22-30 H.P. 7 1/2 x 9".....35-40 H.P.
 Bosch Dual Low Tension Magnetic Make and Break Ignition

These engines are furnished with two bronze fuel pumps which insure the proper level and feeding of the fuel at all times. This is a great advantage as the fuel tanks can be placed anywhere in the boat, to act as ballast, etc. Fuel can't fail to feed in rough water.

4 Cyl.....6x7 1/2", 30-40 H.P. 6 Cyl.....6x7 1/2", 45-65 H.P.
 4 Cyl.....7 1/2 x 9", 45-60 H.P. 6 Cyl.....7 1/2 x 9", 70-90 H.P.

6x7 1/2" runs 400 to 550 R.P.M. 7 1/2 x 9" runs from 350 to 475 R.P.M.
 Write Today for Full Details of this Engine. Reliable Agents Wanted.

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Real Economy For Every Engine

A Detroit Mechanical Force Feed Oiler means real economy because it is adjusted by the operator to feed exactly the amount of oil required—no more—no less.

This means a minimum of oil used for perfect results; but the *real economy*—the *big saving* is evidenced in the freedom from repair bills—the greater service and longer life of the machine.

Detroit Mechanical Force Feed Oilers

are the best possible insurance against burned out bearings, scored pistons and cylinders, annoying delays and shut-downs due to faulty lubrication.



They are made in styles and sizes for every kind of gas—gasoline or oil engine, marine stationary or automobile. Equipped with pulley ratchet, gear or sprocket drive for easy installation on any engine.

Catalog P-64 giving full information gladly sent on request.

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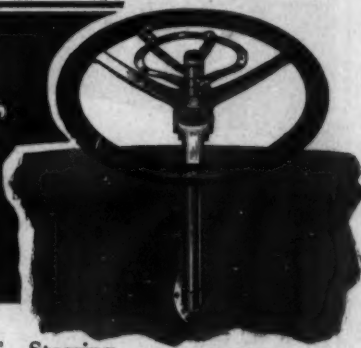
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B

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Leading naval architects and boat builders use our gears on all their work. If your builder is in this class he would probably supply a "Reliance-Rochester" anyway, but to be sure it will pay you to specify it by name.

We have many different types and combinations for steering, motor controls, reverse controls, and various methods of installation. Twenty-five different styles to choose from.

Write today for catalog showing the various styles and illustrations of some of the famous boats equipped with our gears. The latter may give you some valuable suggestions for your own boat.

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 "Prunes"
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 5 Torpedoes for U. S. N.
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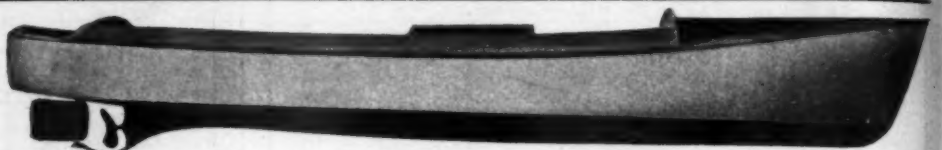


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Shallow water FISH BOAT \$22.00



Rowboats \$18 and up—FISH BOATS \$22 and up.



Rowboats built and designed for Detachable Motors \$35.

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All kinds of boats, all guaranteed and all at a big saving in price. Our rowboats for detachable motors are extra well built to stand the vibration—they ride swiftly and with ease and grace.

For small additional charge we supply Runabout Launches with or without engines, built semi-tunnel. Write for free catalog showing full line—motor boats, canoes, rowboats, launches. Address.

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Vim Motors are standing the test of constant use—they are delivering efficient, continued and uninterrupted power at a low cost of oil and gasoline. They start easily and quickly and absolutely cannot back-fire. There is a Vim for every purpose—speed—pleasure—heavy duty.

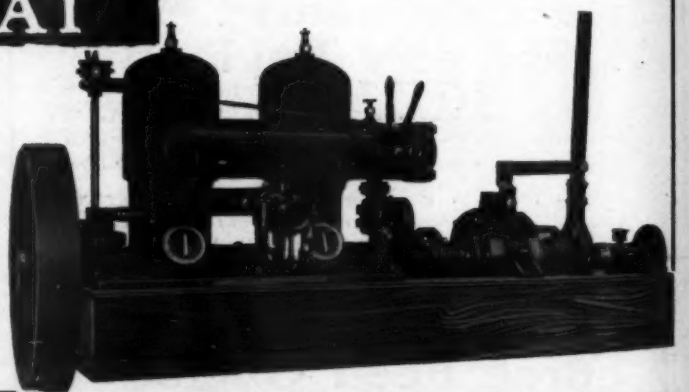
Vim Motors have been built RIGHT from the first—they have embodied only tried and proven principles—no new ideas and experiments have gotten any farther than our experimental department.

Every Vim will run right and keep running. The first motors sold (10 years ago) are still giving satisfactory service. What more can you ask? There is a Vim for every purpose.

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Medium speed Motor 10 H.P. and 18 H.P., also single and triple cylinder models, 5 to 27 H.P.



Matthews Cruisers

34 x 8½ ft. ROMAR, the eighth motor boat built by The Matthews Company for the well known Ringling Family for use at their Florida Home.

60 x 10½ ft. CELERITY, High Speed Cruiser.



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Here's Your Motor

The more carefully you study all the different motors on the market, the more you will realize that in this 4-cylinder, 4-cycle, 2½ x 4 Universal at \$100 to \$160, you will get the most motor value for your money.

9-12 H. P.
4-Cylinder
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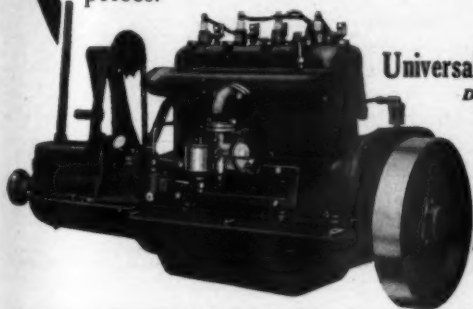
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Motor

Weights only 300 lbs. 800 to 2500 R.P.M. Perfect balance—no vibration. Enclosed reverse gears, die cast bearings, adjustable valve tappets, enclosed valves, hardened one-piece camshaft, sight feed oiler, taper flywheel fit, removable oil pump, handhole plate. Compact and shipshape design.

Write now for complete specifications and prices.



Universal Motor Co.

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Don't wait for the law to get after your noisy motor boat. Eliminate the racket that annoys your guests and your neighbors. Equip your boat with a Maxim Motor Boat Silencer. A silencer—not a muffler. Cuts out noises without cutting down speed. The Maxim does not obstruct the gases, but whirles them and allows them to gradually pass out noiselessly. Absolutely no back-pressure, but increased engine efficiency.

Write for descriptive literature. Mention diameter and number of cylinders—also size of exhaust outlet.

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Send 10c for "Sea Craft Suggestions and Supplies," our new 112-page reference book. Full of valuable information for boat owners. Write today.

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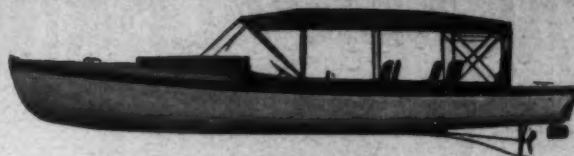
World's Largest Manufacturers of Marine Hardware

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LAW IS
GETTING AFTER
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Clean lined, Kenyon tailored to fit your boat, absolutely weather-proof and can be easily handled by one man. After your first trip under a Kenyon Top, you'll wonder how you ever managed to get along without one.

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Piston Rings for Marine Engines K-P RINGS

Joint ends are held tight with side-lock. They will ride ported engines.

K-P RINGS develop power and reduce fuel expense.

Write for Booklet, "Economy and Power"

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Side Lock
and Groove

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Speed with Luxury



The development of luxuriously finished and equipped speed boats for general runabout use has found its highest expression in the recent productions of Mr. John L.

Hacker, the well known designer of famous racers. These Hacker-Albany boats have reached a point where they are undoubtedly in a class by themselves, as was easily demonstrated by comparisons of the handsome creations exhibited at the New York Motor Boat Show.

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If you are interested in a runabout, hydroplane or express cruiser, write us for catalog, outlining your requirements.

ALBANY BOAT CORPORATION, Watervliet, N. Y.
SHOP 9th STREET P. O. BOX 530, ALBANY, N. Y.

15 H.P.

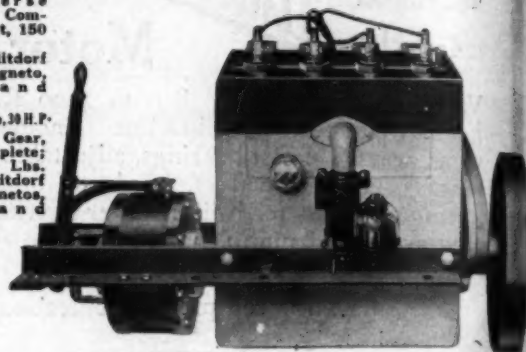


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Four Cylinder

Four Cycle

With Reverse Gear,
\$125 Complete;
Weight, 180 Lbs.
Without Reverse
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Including Splitdorf
Dixie Magneto,
Carburetor and
Spark Plugs.
Eight Cylinder, V-Type, 30 H.P.
With Reverse Gear,
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Weight, 290 Lbs.
Including 2 Splitdorf
Dixie Magnetos,
Carburetor and
Spark Plugs.



Weight Only 180 Lbs. Complete

The most sensational development ever introduced into the marine field—not a freak engine with "original" and impractical ideas, but a high-class, four-cycle power plant with thoroughly standard design, advanced construction and fine materials.

Write today for catalog.

ABLE ENGINE CO., Inc.
405-42nd St. Bldg. New York City

MORRISTOWN Marine Motors

The Highest Quality Motor
of Its Size and Price
Made in America

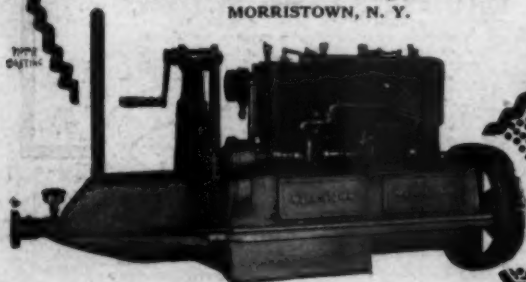
That is a pretty strong statement, we admit, but we have the courage of our convictions and invite the most searching investigation, and comparison with any other motor of similar power, regardless of price.

Look at the brief list of features. The many others which we haven't room to mention, including quality of materials and workmanship, you will find equally satisfactory. Light enough for a hydroplane, fast enough for an express runabout, powerful enough for a cruiser.

Weight, 525 lbs., complete; aluminum crank case; heavy crank shaft; heavy flywheel; large bearings throughout; die cast nickel babbit bearings with laminated shims; manganese bronze connecting rods; one-piece cam shaft, easily removed; high tension dual magneto; rotary gear water pump; constant level splash lubrication with gear oil pump; Joe's reverse gear on base; rear starter; Schiebler carburetor; many other features.

Write today for complete description.
Two Cycle Motors 4 to 15 H. P.

Morristown Boat & Engine Works
MORRISTOWN, N. Y.



Economy and Satisfaction

A marine engine that doesn't give complete satisfaction is a poor investment at any price, no matter how little it costs in the first place, or how much engine (by weight) you seem to get for your money. It is far better to pay a little more and get a really high grade

CAMPBELL Four Cycle MARINE MOTOR

Campbell Motors are not offered in price competition with cheap motors, but they always prove in the long run to be the cheapest motors possible to install, cost of running, repairs, etc., considered. They are light in weight, simple in construction, noiseless in operation, strong and durable, and will start easily and run continuously under any weather conditions. In fuel consumption they are the most economical motors on the market.

Almost any engine will give you power enough if it has sufficient bore and stroke; almost any engine can be built strong enough if there is no limit to the weight. The Campbell reputation, however, has been built upon its high efficiency in relation to weight, having unusual power, strength and durability for an engine of its size.

One, two, three, four and six cylinder motors for pleasure and work boats, from 5 to 60 H.P. distinctive open base construction. We also build Campbell High Speed Motors in 30-40 H.P., 75-100 H.P., and 100-125 H.P. sizes. Rowboat Motors, Lighting and Pumping Plants.

"Buy a Campbell and Keep Going"

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Campbell Motor Manufacturing Co.
102 South Third St., Minneapolis, Minn.

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Will get the *lowest prices* and
best delivery in 1916 on

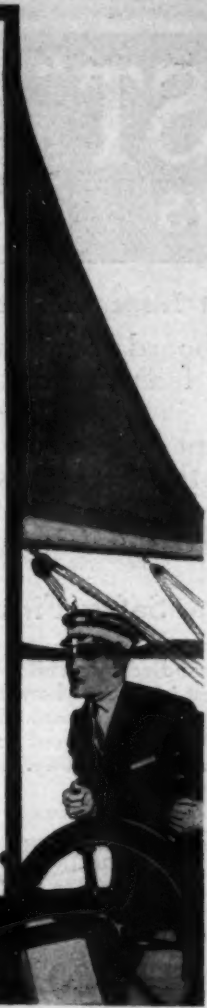
**Marine Hardware
Motor Boat Fittings
Yacht Sails
Flags and Cordage**

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they are courting disappoint-
ment and much higher prices.

Send 20c in stamps for our Marine
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GEO. B. CARPENTER & CO

430-440 Wells St., Chicago.



More Speed Guaranteed

If you want more speed and efficiency out of your boat with-
out going to the expense of a new engine or other elaborate
equipment why not put your problem up to us? For years we
have had a standing guarantee to increase the speed of any
boat 1 to 3 Miles per Hour with a new

BRYANT AND BERRY PROPELLER

The B & B Propeller must be unusually efficient for we have
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and have never had occasion to regret it. You can try one of
our wheels without any chance of dissatisfaction or loss; we
take all the risk.

Bryant & Berry Propellers are made of a special bronze, as
strong as steel, and are accurate in workmanship, pitch and
balance to the highest possible degree. The name "Bryant and
Berry" is stamped on the hub of every genuine B & B wheel.

*Write us today about the size of your boat, engine,
details of construction and kind of service. We will
tell you without obligation which B & B wheel
to use and how much it would cost you*

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More Power in That Good Gulf Gasoline and Supreme Auto Oil

You can always find a Service Sta-
tion along the Florida Coast that will
supply you with these sterling prod-
ucts.

If you touch any of the ports listed
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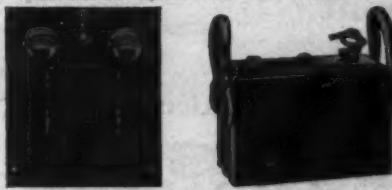
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*The largest independent re-
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APELCO

THE PIONEER OF
MOTOR BOAT
ELECTRIC LIGHTING SYSTEMS



Apelco B-2 Motor Boat Electric Starting System



The APELCO Systems are fur-
nished in three different sizes,
known as Model B-1, B-2 and B-3.
APELCO STARTING UNITS, suit-
able for certain motors, can be sup-
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send with your letter bore and stroke,
h.p., r.p.m. and number of cylinders of
motor for which starting is intended.

THE APPLE ELECTRIC CO.

Factory
NEWARK, N. J.
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"SAFETY-FIRST"

FIRE EXTINGUISHERS



Approved by the Board of Steamboat Inspection Service

Carry a "Safety First" Fire Extinguisher aboard your boat. It is the most reliable fire protection you can have. It never fails to work. Anyone can handle it.

The "Safety First" meets every requirement of safety. It was adopted by the largest electric traction company of the world. No endorsement could be more convincing for here, after extensive investigation and testing, they spent thousands of dollars to protect millions of dollars worth of property and equipment.

Here are a few of the reasons why you need a "Safety First" Extinguisher:



Size, 2 quarts; big enough for real fires
Weight only 11 lbs.; easily handled by a child.
No pumping, therefore easiest to direct where needed.
Constant pressure, throwing effective stream 35 feet.
Always ready for use—simply turn valve and point nozzle.
All metal—no rubber or leather to rot away.
Easily refilled after use—as good as new.
Effective for gasoline, electrical and all other fires.

RED
ENAMELED

\$9.00

LACQUERED BRASS
OR NICKEL PLATE

\$10.00

Order a "Safety First" Today
or write for full information. Proposition for dealers.

HANSEN-NIETER SAFETY CO., Inc., 103 Park Ave., New York City



Height, 16 in.
Diameter, 4 in.

**Purchased by U. S.
Government**

**Awarded Grand Prize
Panama-Pacific Exposition**

Wisconsin Detachable Motor

Backed by 15 years' marine motor experience

The U. S. Government required a number of 3 1/2 h.p. detachable row boat motors. Specifications were submitted by many manufacturers. In this keen competition—with Government Engineers as judges—the Wisconsin Motor won because of its mechanical design and quality of materials used in its construction.

Well-known row boat motors were exhibited at the Exposition, and the Wisconsin received the highest and only award.

The Wisconsin Gives Most for the Money

Let the judgment of Government Engineers and the Jury of Awards guide you to the best in row boat motors—the Wisconsin. These specifications—self-locking tiller, waterproof reversible high-tension magneto, water-cooled silencer, patented top adjuster—insure a smooth-running, powerful motor.

We know how to make row boat motors for we have built the highest grade of marine motors for 15 years. Send for special catalog of Inboard Marine Motors, 5 to 60 h.p.—1 to 6 cylinders.

Wisconsin Valveless Marine Motors. Built in 10 sizes—5 to 60 H.P.—1 to 6 cylinders.



Decide on the Wisconsin Now

The Wisconsin Motor fits any row boat. Built for both fresh and salt water use. Develops full speed without loss of power. Economical—easy to operate. Thousands in use. Guaranteed to give satisfaction. Write for specifications and prices.

Wisconsin Machinery & Mfg. Co.

17 Hildreth St. Milwaukee, Wis.



Wisconsin Junior 2 H.P. weighs 50 lbs.

MOHAWK

The Motor That Makes Motor Boating a Pleasure

For power, speed, economy and reliability you can't beat a good two-cycle motor, if it is built the Mohawk way. We have specialized on the two-cycle type, and in addition to unusually perfect design we put into them a quality of materials and workmanship seldom found in any other small motor, even of the highest priced four-cycle makes.

We challenge any maker of any type engine to produce a machine which will match the Mohawk in all around satisfaction—power for power, dollar for dollar, and quality for quality. We use double ignition, auxiliary air intake, extra large valve ports, four rings on each piston, and many other superior features. Racing, medium duty and extra heavy duty types.

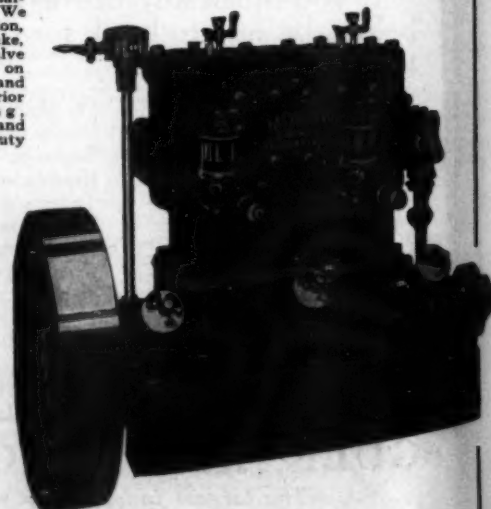
Two-Part Type Kerosene- Gasoline

1 Cyl., 8 H. P.
2 Cyl., 12 H. P.
4 Cyl., 25 H. P.
Three-Part Type

1 Cyl., 3 1/2 H. P.
1 Cyl., 6 H. P.
2 Cyl., 7 H. P.

Combination Two-Three Part

1 Cyl., 5-6 H. P.
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2 Cyl., 10-12 H. P.
2 Cyl., 14-20 H. P.
3 Cyl., 15 H. P.
3 Cyl., 18-21 H. P.
3 Cyl., 21-30 H. P.



Write us today for the latest Mohawk catalog. Tell us how much power you need and let us quote prices.

S-R Manufacturing Co., Ingersoll Ave. Schenectady, N. Y.

TOPPAN

DORIES - RUNABOUTS - CRUISERS

ASK an old "salt" what kind of a power boat to get and he will probably recommend a Toppan Dory or Launch. Men who spend their lives on the water know that safety and seaworthiness are the first requisites. These two qualities are characteristic of all Toppan boats.

TOPPAN WINNERS FOR 1916

DORY LAUNCHES—18, 20, 22, 26 and 30 ft.
SAILING DORIES—14, 16, 18 and 21 ft.
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FISHING DORIES—18, 20, 22, 26 and 30 ft.

ROWING SKIFFS, SWAMPSCOTT DORIES.

RAISED DECK CRUISERS—27 and 30 ft.

SPECIAL OUTBOARD MOTOR BOAT—\$50 and Up.

Special CAPE CAT SAIL BOATS—21 and 24 ft., with or without power.

Write to-day for our new 1916 illustrated catalog.

TOPPAN BOAT M'F'G. CO.

21 Haverhill Street, BOSTON, MASS.

FACTORY: MEDFORD, MASS.



We have combined up-to-date construction and modern manufacturing methods with the born boat builder's knowledge of design.



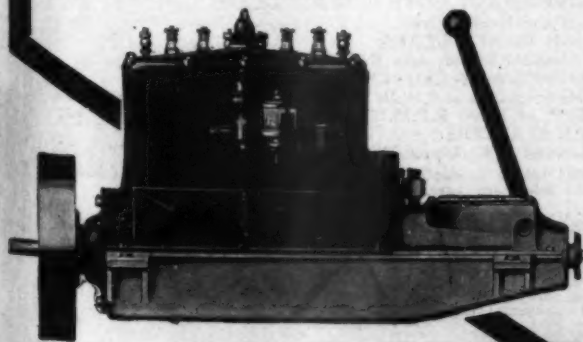
TOPPAN BOAT
BY DETACHABLE
MOTORS.



Wisconsin Motors

CONSISTENT

The eager enthusiasm of youth, the untiring energy of perfect health, are typified in the magnificent flexibility and reserve power of this snappy model. "Sweet running"—that's what motor experts say of it. Its shipshape, compact design, with all working parts enclosed, yet easily accessible; the perfect balance of reciprocating parts; its smooth, consistent performance under all loads; all these points of superiority combine to make it unique.



Inspect the materials that go into all Wisconsin Motors, the way shafts are ground and balanced, the way bearings are fitted. Note how the Wisconsin lubricating system keeps all bearings flooded with oil, at whatever angle the motor is running.

Each of the many types of Wisconsin Motors—all four cycle—four, six and eight cylinders, represents the highest development of marine motor design and construction. If you haven't a Wisconsin catalog, write for specifications of the type you want.

WISCONSIN MOTOR MANUFACTURING CO.

Station A, Dept. 302, Milwaukee, Wis.

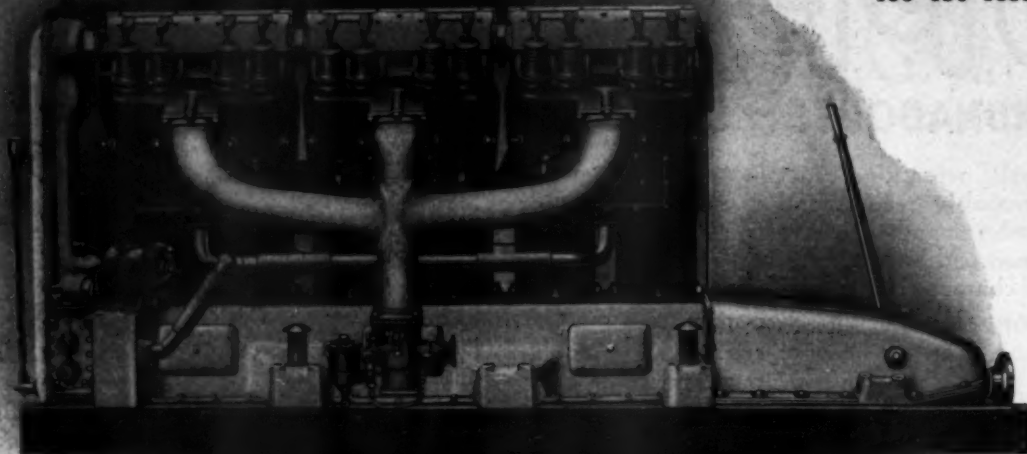
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Advertising Index will be found on page 45.

Hickman Sea Sled Engine

400-450 Horsepower



High speed type.
Weight 2850
pounds. Normal
revolutions, 1400.
6 cylinders: bore
7 1/4 inches, stroke
9 inches. Double
overhead valves.

This engine has the essentials of a high power, high speed machine

Hollow crank-shaft, chrome nickel steel, 3 3/4 inches diameter, seven main bearings. Length, intermediate bearings, 4 inches. Length, crank pin bearings, 4 inches. Diameter, 3 3/4 inches.

High pressure lubricating system, pressure in excess 250 pounds per square inch. Low pressure system, pressure in excess 200 pounds per square inch.

This engine is not an experiment. It has been run for two years in boats, the first year to eliminate defects, the second year to detect faults, which did not develop. It has been run under load for two hours at 2200 revolutions per minute, and developed no defects. Electric starting.

Built by

MURRAY & TREGURTHA CO.

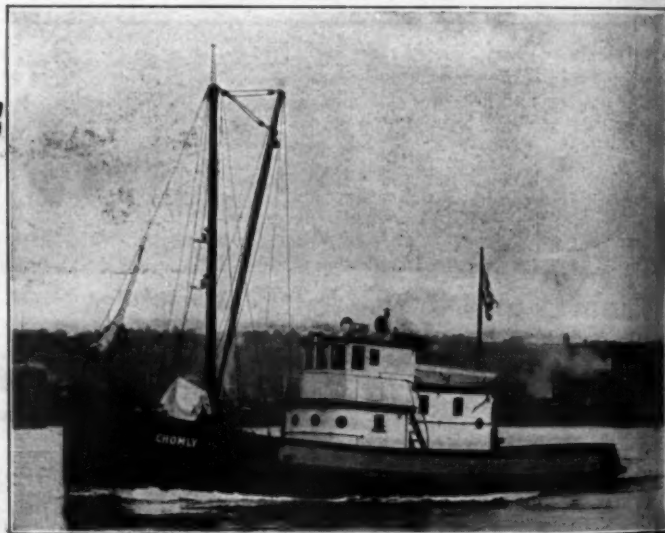
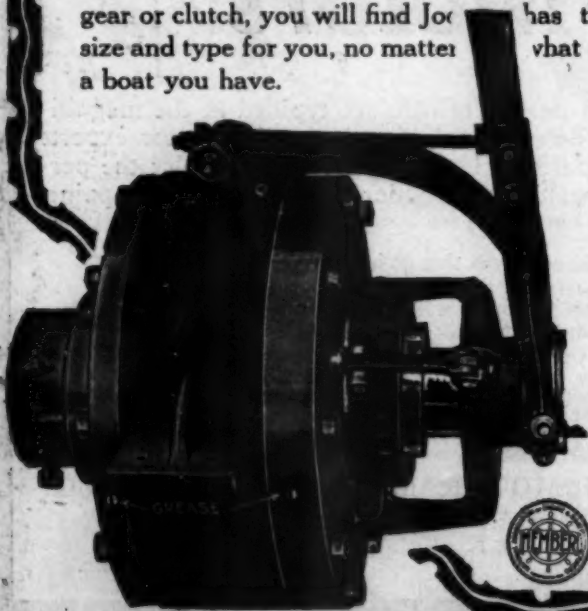
340 WEST FIRST STREET

SOUTH BOSTON, MASS.

JOE'S

REVERSE GEARS

You'll find Joe's Gears on heavy commercial boats, on big motor yachts and cruisers, on hydroplanes, fast runabouts and pleasure boats of medium size. If you want a light, quiet, reliable and durable gear or clutch, you will find Joe's has the right size and type for you, no matter what kind of a boat you have.



The Chomly, 75 ft. x 18 ft. x 8 ft. Diesel Motor with No. 172 Joe's Duplex Drive Gear. The engineer took the gear apart, then put down in his log, "Some Clutch."

JOE'S DUPLEX DRIVE HEAVY DUTY REVERSE GEARS

For Heavy Boats and Racing Craft.

JOE'S FAMOUS HIGH POWER GEARS

For High and Medium Speed; also Racing Outfits.

JOE'S HIGH SPEED ONE-WAY CLUTCHES

Especially for Hydroplanes and High Speed Propositions; Smallest Size Transmits 30 H.P. at 1,000 R.P.M.

JOE'S SAFETY REAR STARTERS

Best Made. Absolutely "Kick-proof."

Write today for latest catalog. It contains valuable information you should have before you select any gear, clutch or starter. It is free.

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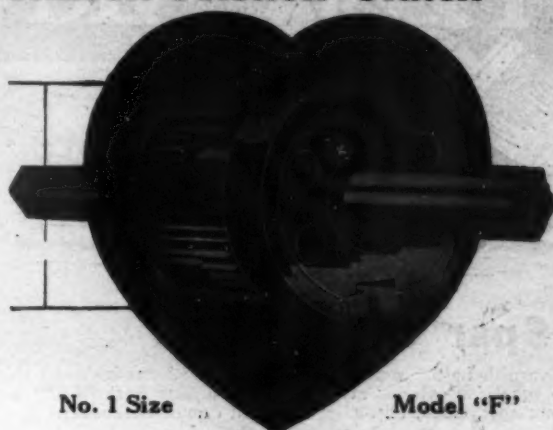
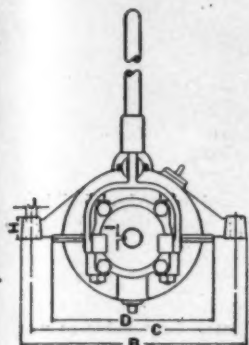
THE JOHNSON MARINE REVERSE GEAR

Embodies the A. B. C. of High Grade Reverse Gear Construction

A for ALLOY STEEL: 3 1/4% Nickel Steel, used in all GEARS and SHAFTING properly hardened and heat treated.
B for BALL BEARINGS: DOUBLE ROW BALL BEARINGS of an approved type on the main drive shafts in each end of the case, the propeller end being a DOUBLE THRUST BEARING.
C for CLUTCHES:

The Johnson Friction Clutch

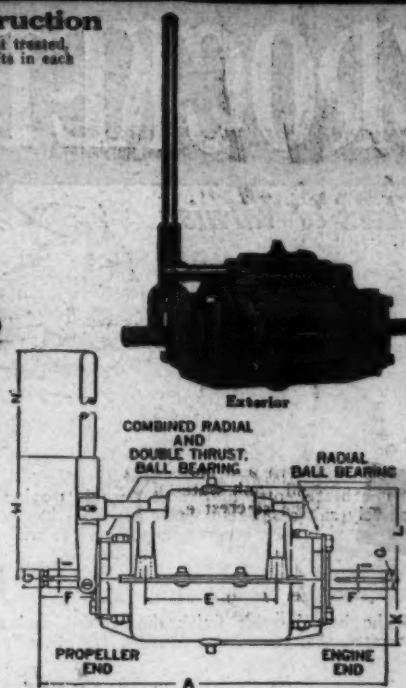
in a DOUBLE TYPE is THE HEART of THE NEW JOHNSON ALLOY STEEL REVERSE GEAR. Investigate these features, new to REVERSE GEAR construction, which we have successfully applied and used, and then use your own judgment in selecting the Gear for your own boat for the coming season.



No. 1 Size

Model "F"

Showing construction



Gear No.	H.P. for 100 R.P.M. Max.	H.P. for High Speed Motors Max.	H.P. for Medium Speed Motors Max.	WEIGHT		List Price for Cast Iron Case	List Price for Aluminum Case	DIMENSIONS IN INCHES															
				Cast Iron Case	Aluminum Case			A	B	C	D	E	F	G	H	I	J	K	L	M	N		
0	3/4	5	8	23	19	\$24.00	\$36.00	12 3/4	7 1/4	7	5 1/4	4 1/4	2	3/4	3/4	1 1/4	1 1/4	2 1/4	3 1/4	4 1/4	7 1/4		
*1 "A"	1 1/4	10	15	40	32	36.00	48.00	13 1/4	9 1/4	8 1/4	6 1/4	4 1/4	3 1/4	1 1/4	1 1/4	1 1/4	2 1/4	3 1/4	4 1/4	5 1/4	13 1/4		
2	2	20	30	70	55	42.00	54.00	19 1/4	10 1/4	9	7 1/4	6 1/4	3 1/4	1 1/4	1 1/4	1 1/4	2 1/4	3 1/4	4 1/4	5 1/4	15 1/4		
*3	3	30	45	93	75	48.00	60.00	21 1/4	11 1/4	9 1/4	8 1/4	6 1/4	4 1/4	1 1/4	1 1/4	1 1/4	2 1/4	3 1/4	4 1/4	5 1/4	15 1/4		
4	5	50	75	247	160	72.00	90.00	27 1/4	16 1/4	14 1/4	11 1/4	8 1/4	5 1/4	1 1/4	1 1/4	1 1/4	2 1/4	3 1/4	4 1/4	5 1/4	27 1/4		

*Delivery date on request on these sizes.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

Are You Satisfied?

Now that the season is almost over, stop a minute and consider whether your engine has run as smoothly this year as you would like to have it. Are you satisfied? Do you get as much power and speed, and as good economy as you used to get? Can you afford to get along with 50% or 75% efficiency, when for a few dollars more you can get 100% efficiency, at least in so far as carburetion is concerned? Perhaps all you need is a

KINGSTON "ENCLOSED TYPE" CARBURETOR

A new Kingston Carburetor puts a degree of snap and vim into your engine that you can secure in no other way. Simply the feeling that the engine is doing better is worth all it costs, to say nothing of the improvement in fuel economy and many other advantages. It is made for all sizes and types of engines.

This carburetor is absolutely up-to-date—designed for the poor grade of gasoline we all have to use these days. Remember, the gasoline used three to five years ago was so much more volatile and easy to vaporize that a carburetor designed for that fuel is utterly inadequate today.

Let us prove what a Kingston will do for you at our risk. If it satisfies you, you will want it. If it doesn't, you lose nothing. Put it up to us.

Write today for price, trial offer and guarantee.

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New York Office, 1733 Broadway
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CROCKETT'S VARNISHES

Makers of Varnish



Since 1871

Spar Composition

The best known and most durable marine varnish in the world. The acknowledged standard with ship, yacht and motor boat builders. Positively salt and fresh water proof, it has no equal for exterior marine use or outdoor work of any kind. The deep brilliant lustre is not affected by the severest exposure. It will not spot, crack, blister or scale and cannot turn white.

No. 1 Preservative

The best interior finish that brains and experience can produce for use on steamships, yachts and motor boats. Less liable to mar or scratch than any finish known. Is not affected by the use of hot water and soap. Can be rubbed and polished, or left with an egg-shell gloss.

Waterproof Floor Finish

The only reliable finish to use on the floors of yachts and motor boats. Heel marks do not show white on it. Can be washed with hot water and soap, the only way to keep a floor clean.

Send for Booklet "WHAT TO USE AND HOW TO USE IT"

THE DAVID B. CROCKETT CO.

VARNISH MAKERS

BRIDGEPORT, CONN.

If your dealer does not handle Crockett's, write us direct—Don't accept a substitute.

Viper
Trade Mark Reg.,
U. S. Pat. Off.

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VIPER SEA SLED

Hickman Patents.



32-foot Sea Sled for U. S. Navy Dept., running at 40 miles.

This boat has planed with twenty-four passengers. Send 25c in stamps for latest bulletins.

MURRAY & TREGURTHA CO.,
340 West First St.,
South Boston, Mass.

VIPER CO., Ltd.,
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Prominent Niagara Owners.
Mr. P. A. Rockefeller
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NIAGARA

Did You See Them?

One of the chief centers of attraction at the New York Motor Boat Show last month was our exhibit of Niagara Runabouts. Among the glistening engines and extravagant built-to-order boats, the Niagara standard models stood out with the best of their class, regardless of cost. Their popularity proved our contention that built-to-order quality and luxury, plus stock-model economy, is a combination which can't be beat.

Niagara Runabouts are staunch, solidly built boats—seaworthy, durable, fast and comfortable. The design, both exterior and interior has been developed and refined to meet the most exacting demands for a boat of this type. The workmanship, equipment and finish are all of the highest grade. Speed and price depend upon the power installed.

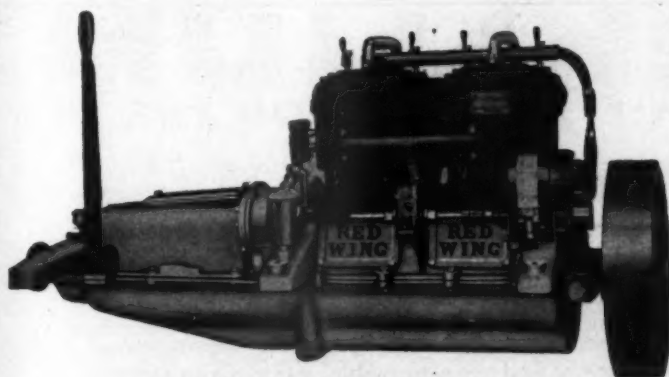
We are thoroughly convinced that Niagara Runabouts offer more quality and service, dollar for dollar, than you could secure in any other boat. We have convinced many exceedingly careful buyers of the same fact. Let us convince you.

If you are in the market, don't fail to investigate. Write today for full information and prices. Immediate deliveries of 20, 25, 28 and 32 ft. models.

NIAGARA MOTOR BOAT CO.

210 Sweeney Street

NORTH TONAWANDA, N. Y., U. S. A.



Unit Power Plant Models "A" and "AA" THOROBRED
14-20 H.P., 3 1/2 x 4 1/2"; 18-24 H.P., 3 3/4 x 4 3/4"
Furnished with or without Unit Power Plant

yet. Commissioner Riggs, of the railroad, thinks our boat (Dolly Varden) is the candy. I took him on a hurry-up trip 77 miles down the Tanana River and by his own time-keeping we made 23 miles an hour, and I couldn't keep her wide open all the time at that."

"Jimmie," like all the other Thorobred owners, would just about as soon remain a bachelor since he's got his Red Wing. He's selling "Thorobreds" now, to the game and fur wardens, the prospectors, miners, traders and even the Indians.

Before you settle on any motor for 1916, investigate the Thorobred. Our new Model A is the candy for smaller boats.

Five Sizes—

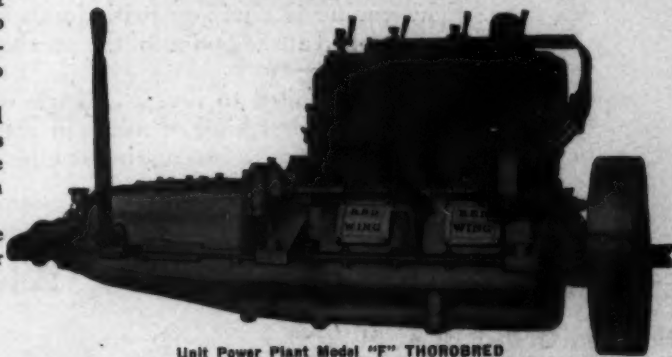
Model A—3 1/2 x 4 1/2", 14-20 H.P. Price \$180 and up.
Model AA—3 3/4 x 4 3/4", 18-24 H.P. Price \$210 and up.
Model H—3 3/4 x 5 1/2", 25-33 H.P. Price \$275 and up.
Model F—4 1/16 x 5", 28-36 H.P. Price \$342 and up.
Model B—4 1/2 x 5", 32-40 H.P. Price \$420 and up.

Red Wing Thorobred

THE MOTOR WITH POWER TO SPARE

"Steamboat Bill" has a Big Reputation—

but he hasn't anything on "Sandbar Jimmie," of Fairbanks, Alaska. Information at hand does not disclose the origin of his sobriquet, but ten to one it's either the deftness with which he avoids them or the way his Model F Red Wing Thorobred plows over them. "Jimmie" says "that fellow in New Zealand has nothing on me. When the government officials want to go some place in a hurry, go quick and get back, they come for me and I have never failed them



Unit Power Plant Model "F" THOROBRED
28-36 H.P., 4 1/16 x 5"
Furnished with or without Unit Power Plant

RED WING MOTOR COMPANY, Dept. B., RED WING, MINN., U. S. A.

Build Your Own Boat and Save ¾

\$37 Buys Patterns and Frame of This 23-Footer



Saw, Plane, Hammer, Screwdriver—All the Tools You Need



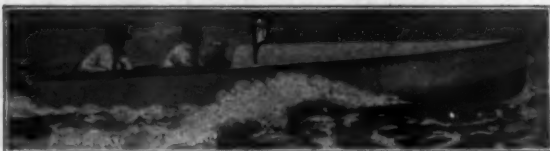
You can saw straight, you can drive nails and screws. So you can assemble your new boat by the Brooks System. You need know nothing of designing or of the fine points of boat-building—the materials for the boat come to you all ready to put together.

All the fitting of parts has been done by our experts. Our plan gives you as good a boat as any professional could make and better than most boat-builders now build. It's good exercise, too—it's more fun swinging a hammer than a dumb-bell.

Send for Big Free Catalog

We have three propositions: (1) We furnish you with the patterns. (2) Or we furnish you with the patterns and knocked-down frame. (3) Or

we furnish you with the complete knocked-down boat. Fully illustrated instructions always included. Write for the Brooks Boat Book. See illustrations and descriptions of speed boats, family launches, hunting boats, sailboats, rowboats, sailing, paddling and power canoes. Many styles and sizes in each class.



Fastest and Lowest Priced Boat in the World

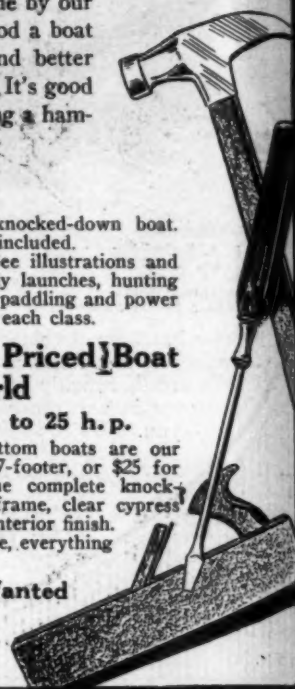
10 to 32 Miles with 4 to 25 h. p.

These two semi-V bottom boats are our leaders—\$45 for the 17-footer, or \$25 for the 15-footer buys the complete knocked-down boat—best oak frame, clear cypress planking, decking and interior finish. Prices include hardware, everything except paint.

45

\$25

Builder Agents Wanted



BROOKS MFG. CO., 6303 Rust Ave., Saginaw, Mich.

Our New Model

FOR the yachtsman who desires an enclosed engine of the highest quality, we have produced a new model of the AUTOMATIC. It is built with either four or six cylinders, in sizes ranging from 30 to 150 H.P.

In construction, cylinders of the "L" type have been used, and each cylinder is separate and independent. All bearings are made of special bronze and are removable. The oiling system is entirely enclosed and is dependable at all speeds. The oil is circulated by means of a pump operated by the crank shaft, and every working part receives proper lubrication. The valves are large and are operated mechanically; they may be removed without disturbing the cylinder head. The engine is equipped with jump spark ignition, any make of carburetor or magneto being supplied at the option of the purchaser.

Exhaustive tests have failed to reveal a single weak feature in this new model. Installed in boats and given the hardest kind of usage in actual service, it has demonstrated that it is, beyond a doubt, the leader in the marine engine field. May we send you further particulars regarding this new AUTOMATIC?

The Automatic Machine Company

BRIDGEPORT

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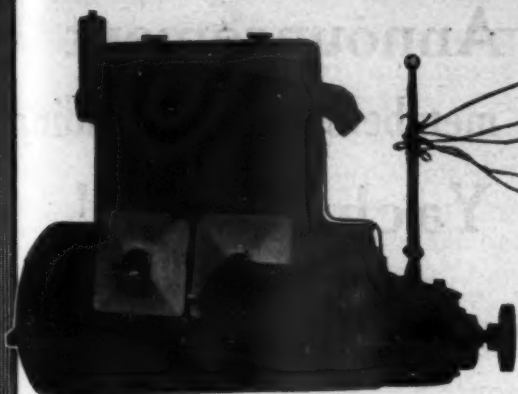
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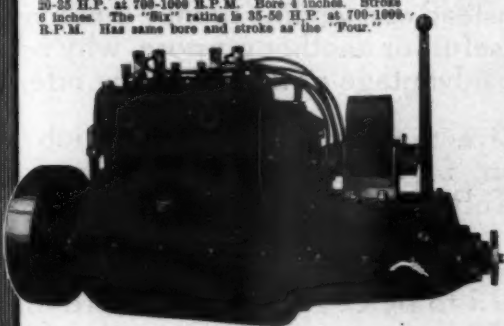
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CONNECTICUT

MARINE ENGINES FERRO



The "Four" for Medium Duty
30-35 H.P. at 700-1000 R.P.M. Bore 4 inches. Stroke 6 inches. The "Six" rating is 35-50 H.P. at 700-1000 R.P.M. Has same bore and stroke as the "Four."



The "Four" for Light Duty
Added to the Ferro line this year. 10-14 H.P. at 1000-1400 R.P.M. Bore 2 1/2 inches. Stroke 4 inches.

Is Your Boat Like One of These?

Then make it fully efficient by installing the engine that's built for it—the All-Enclosed, Valve-In-Head Ferro 4-Cycle, four or six cylinders. Embodies the most advanced principles—

Overhead Valves (without cages) and Detachable Cylinder Head: Mean greater accessibility of working parts, less tendency to carbon, more effective cooling, added power.

Mono-bloc Castings: Greatly reduces vibration by increasing rigidity of engine, thus preventing distortion, lessening wear and tear, keeping the mechanism in tune and quiet.

Removable Cylinder Sleeves: Casting and sleeve are made of different metals best adapted to the purpose. Sleeves standard and interchangeable.

Write for catalog No. 1034 for full information about these two engines, or the new Ferro "Four" 4-Cycle for light, fast work.

Eleven 2-Cycle Models from Which to Choose

These run from 3 to 25 h.p. in both gasoline and kerosene burners. Catalog 1032 contains complete description.

For rowboats and canoes, the Ferro Detachable Outboard Motor. Ask for catalog 1031.

THE FERRO MACHINE & FOUNDRY COMPANY
310 HUBBARD AVENUE CLEVELAND, OHIO, U. S. A.

MULLINS STEEL BOATS CAN'T SINK

THERE goes twenty feet of beauty and strength, grace and power—a veritable automobile of the waterways—a Mullins steel boat.

Exclusive designs furnished by America's foremost naval Architects give every Mullins boat that individuality of line. Twenty years of knowing how is responsible for its smooth, leak-proof, puncture-proof steel hull.

Kermath, Sterling, Imperial, Ferro and Pierce-Budd 2 and 4-cycle Motors, so installed as to reduce vibration to a minimum, and patented silent under-water exhaust make Mullins the cleanest and quietest boats afloat. Safety! Comfort of mind and body! Service! Motor Boating at its best.

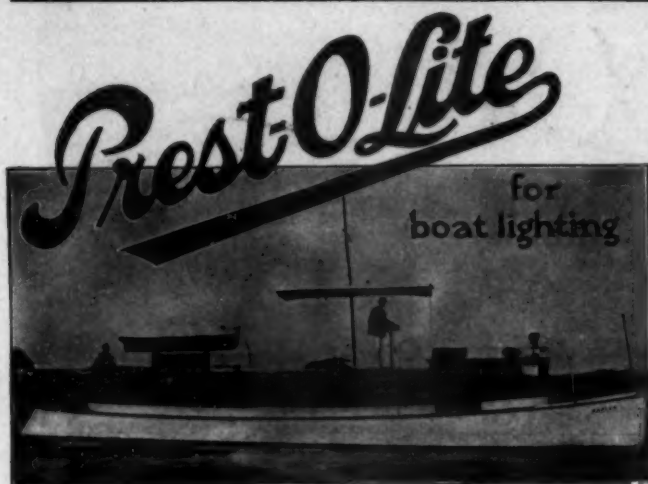
Every boat a finished product, guaranteed as to speed and durability. Hulls of steel, having greater resistant qualities than one-inch oak planking and air-tight compartments fore and aft, spell safety.

Don't buy a boat for any purpose until you have read the Mullins catalog—free on request.

The W. H. Mullins Company
714 Franklin Street SALEM, OHIO

World's Largest Manufacturers of Steel
and Wooden Pleasure Boats





Perfect Lighting at Small Cost

No boat is completely equipped without adequate lighting.

Prest-O-Lite will add to your pleasure and safety. It gives you brilliant light, perfect service and satisfaction under all conditions. It combines the highest efficiency, the utmost in practical convenience and economy. Provides one system adequate for every light on your boat—searchlight, signal and cabin lights. Many of the finest power boats and yachts in American waters are Prest-O-Lite equipped.

Easily Installed at Slight Expense by Owner or Builder

We have a very simple plan for the installation of acetylene boat lighting fixtures, together with various appliances for engine priming, cooking, automatic lighting for searchlight, cabin and signal lights, regarding which we shall be glad to furnish full details on request.



For Cooking and Lighting Ashore or Afloat.

A Prest-O-Lite Auto Hot-Plate provides a cooking outfit that is convenient and portable. May be used in combination with Stem and Burner attachment for camp lighting. Send for circular.

Makes Motor-Starting Quick and Easy

Prest-O-Lite Priming makes a cold heavy motor start easily on one or two slow, easy turns. Costs very little, and is easily attached by anyone.

Prest-O-Lite Co., Inc.,

The World's Largest Makers of Dissolved Acetylene

260 Speedway
Indianapolis, Indiana
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Prest-O-Lite Exchange Agencies Everywhere

Important Announcement to members of the leading Yacht Clubs!

It will shortly be necessary to procure your club flag for the coming season.

Instead of spending money that may be useful for another purpose, why not take advantage of the following offer:

Give the secretary of your club a dollar for a year's subscription for *MoToR BoatinG*. He will send a certain number to us and we shall give your club, free of charge, a flag guaranteed to be U. S. Govt. standard all-wool bunting—according to the following schedule. Your flag—

4 ft. x 6 ft.,	worth \$6,	for 15 Subscriptions
6 " x 9 "	" 9, "	20 "
8 " x 12 "	" 11, "	25 "
10 " x 15 "	" 13, "	30 "
12 " x 18 "	" 16, "	40 "

This does not refer to the Stars and Stripes, but to your club's own signal, made according to your club's own design.

You thus kill two birds with one stone. You get the finest magazine of its kind for a whole year and, with your fellow-members, you save your club real money.

Simply hand your dollar to your Secretary, or whomsoever the club may designate to collect it, tell him what it's for, and he will do the rest. A two years' subscription (\$2) will count as two subscriptions.

MoToR BoATING
119 West 40th Street
New York City

LAWLEY BOATS

THERE is an indescribable quality about Lawley-built Boats which gives them a certain value apart from the merits of the boat itself. This value is not an artificial creation of our own brains. It is a tangible thing which is recognized by all Lawley owners, by naval architects, yacht brokers, yachtsmen and others familiar with high-grade boats.

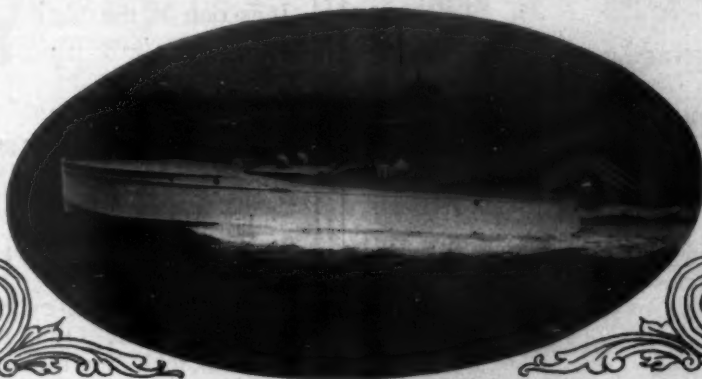
We have the largest, best organized, most completely equipped plant of its kind in America. We have had more experience than anyone else competing in this field. We have produced more successful boats of each type than any other high-grade builder. These are merely statements of fact—not claims.

We build tenders, motor boats, life boats, cruisers, auxiliaries and yachts of all types. Wood, steel bronze or composite constructions. Steam power plant.

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Write today for the
illustrated Lawley
Booklet.

Get the Newest LA Engine Book

THE question of selecting the right engine for that boat of yours is an important one. It will pay you well to get all the information possible before making your final decision, as the satisfaction you get from your outfit will depend largely upon the care you take in choosing your motor. You will find the new L-A engine book brim full of valuable hints and interesting engine information. It describes our complete line of inboard and outboard motors for canoes, rowboats, pleasure boats and work boats.

L-A rowboat motor with either flywheel magneto or battery ignition, rudder steered, powerful, silent and smooth running.

L-A 2-cycle motors in both single and double cylinder types and made in sizes from 2½ to 12 H.P., and are noted for their extreme simplicity, big power, and qualities of absolute dependability.

L-A 4-cycle motor is one of our newest models. It is a 4-cylinder, 14 H.P. power plant with cylinder cast *en bloc*. A very clean, compact and accessible engine that will give splendid service in pleasure boats, work boats or speed boats.

30 Days Trial

Our liberal plan of selling motor on 30 days trial gives you the chance to try out L-A Motor in *your own* boat before making your final decision. This is the safest way of buying your engine—the new engine book gives complete details.

Lockwood-Ash Motor Co.

1301 Horton Ave., Jackson, Mich.

AN LA ENGINE
FOR EVERY PURSE
AND PURPOSE.



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COVERS
THE CONTINENT

1. Operate as a pump or automatically by compressed air.
2. Special device shows at sight whether machine has been tampered with.
3. A steady stream average 30 feet.
4. A non-conducting liquid, deadly to electrical, oil and gasoline fires. Harmless to skin or fabric.
5. Not affected by heat or cold.



Easy to Aim

But it wouldn't be so easy if the man in the picture had to aim and pump too.

He is master of the situation, because he uses a

J-M FIRE EXTINGUISHER

The Last Word in "Safety First"

A few quick strokes of the pump—then open the nozzle and direct the steady, powerful stream at the base of the flames.

It's easy and it's accurate, because both your hands are free—because no further pumping is necessary, if so desired.

Read the distinctive feature list above. Learn the many exclusive advantages of the J-M FIRE EXTINGUISHER.

Labeled by the Underwriters' laboratories and included in the list of approved fire appliances issued by the National Board of Fire Underwriters.

The J-M Extinguisher Fluid is supplied in cans that list at \$1.00. Each can contains sufficient liquid to fully charge one extinguisher. Liquid is non-deteriorating.

Send for booklet to-day.

H. W. JOHNS-MANVILLE CO.

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THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED
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Self Starting

The latest improvement
in rowboat motors

*Operates from the seat without
touching the flywheel*



Built-in
Magneto
or Battery
Ignition
3 H. P.

THE Koban
Rowboat
Motor with
starter, solves
the problem of
cranking row-
boat motors.
It is one of the big
1916 improvements.

The Great 2-CYLINDER KOBAN ROWBOAT MOTOR

The original 2-cylinder rowboat motor. Other new features, including tilting device, multiple speeds, side steering tiller, waterproof carburetor, aeroplane breaker point magneto and many others.

Doesn't Shake the Boat

THE opposed cylinders fire at the same time, thus taking up the shock, one stroke against the other. No other motor but the Koban is free from vibration.

Has the speed—and then some

It's a demon for speed. Indeed, so fast that it must pay the penalty of a handicap in most races.

"It can pass any motor on our lake," is the message from Hibbing, Minn.

"It blows right by all of them," is the report from Glens Falls, N. Y.

This is typical of hundreds of other letters on the point of speed, from all parts of the world.

It is a real motor—built on sound engineering lines

Write for the new, free 1916 catalog.

Dealers and agents wanted in unoccupied territory.

Koban Manufacturing Company

246 South Water Street MILWAUKEE, WIS.

Our line also includes a 2-cylinder, 3 H. P. vibrationless inboard marine engine for small launches, canoes, etc.



Stored-Up Miles of Boat Rides

LONG, healthful hours of water sport, are yours in the Evinrude. Where you will and when you will, in any rowboat or canoe, on ocean, lake or river! No more rowing—you're captain, not crew. Just a turn of the flywheel, and you're off for a cruise with no dread of a long row home again.

EVINRUDE DETACHABLE ROWBOAT & CANOE MOTOR®

There's more speed, more power, in the new Evinrude Four-Cycle Twin—a two-cylinder motor that runs smoothly and quietly, with almost no vibration.

There's more speed, too, and other improvements, in the Single Cylinder Models for 1916.

The Evinrude Magneto—Built-In Fly-Wheel Type—is entirely insulated and waterproofed, furnishing perfect ignition at high or low speed, no matter how heavy the rain or how drenching the spray.

Evinrude Motor Co.

451 Evinrude Block
Milwaukee, Wis., U. S. A.

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OVER 40,000 SOLD



EVINRUDE MOTOR CO.

451 Evinrude Block, Milwaukee, Wis.

Please send me the 1916 Evinrude Catalog.

Name

Address

City State

GREAT LAKES CRAFT

Great Lakes Boat Building Corporation

With General Offices at Milwaukee

Announces its acquisition of the shops, yards, organizations, designs and good will of the

Saint Louis Yacht and Boat Company

Builders of "Saint Louis Craft," and of the

Milwaukee Yacht and Boat Company

Builders of "X-Celo Boats"

Attention is called to the superior facilities of the Corporation for the design, when desired, and construction of boats of the highest grade of all types and sizes up to two hundred feet in length.

The Corporation, with its \$120,000.00 of capital, fully paid, has ample resources for the conduct of its business. Further information as to its responsibility may be obtained from Dunn or Bradstreet, or the First National Bank, Milwaukee, or the Mississippi Valley Trust Company, St. Louis.

The organization includes men with successful records in the management of large undertakings, three trained engineers and a naval architect of high standing, and a corps of skilled workmen under a superintendent with twenty-five years' experience in the construction of high-grade boats.

The plant, located one-half mile from Lake Michigan, on the Kinnickinnic River, between Becher and Greenbush Streets, Milwaukee, is one of the largest and best equipped in the United States. It is built of hollow tile and steel with steel sash, and has over 20,000 square feet of well-lighted floor space, served by a traveling crane, and is equipped with modern motor-driven wood-working machinery, which is fully enclosed to permit of a finish for the work in keeping with high-grade construction. The general offices of the Corporation are in the office building adjoining, permitting of close supervision. The equipment of the plant includes an hydraulic brake for the testing, before acceptance and installation, of all engines up to 300 H.P., insuring satisfaction to the customer in respect to the engine as well as the hull. A large stock of marine engines of standard makes and of marine supplies is maintained.

The Yards have a water frontage of 490 feet and a depth of 260 feet, and include a dock, yacht basin, 250-ton motor-driven marine railway, a large crane, gasoline and oil station, and a locker house and other facilities for the convenience of customers whose boats are being fitted out or stored.

The location permits of the prompt and economical delivery of boats by water or rail to the principal boating centers of the United States.

The policy of the Corporation is to build only the best, and through shop and organization efficiency and large production to reduce the cost to a minimum. The production of certain thoroughly tried stock model runabouts and cruisers for prompt delivery, which are absolutely guaranteed to give satisfaction, places the Corporation in a position to meet the growing demand throughout the country for standardized boats of high grade at prices which are reasonable, and by thus keeping its shop operating efficiently through the year irrespective of seasons, it is in a position to build special boats designed by its own or other naval architects on a more efficient basis than would otherwise be possible.

Inquiries should state approximately the size and type of boat desired, the number of persons to be accommodated, the speed required, and the waters to be navigated. With the requirements thus outlined, appropriate bulletins or designs will be forwarded promptly.

Visitors are always made welcome.

Great Lakes Boat Building Corporation

Shops, Yards and General Offices
Milwaukee, Wis., U. S. A.

W. C. MOREHEAD
Vice President

JUDSON H. BOUGHTON
Managing Director



Raised deck cruiser, Daraf, 40 feet in length, 10 feet beam, powered with a 4-cylinder, 4-cycle heavy-duty Manhasset motor, bore 5 inches, stroke $5\frac{1}{2}$ inches, No. 6254, registered in the Oyster Bay Yacht Club. Cabin divided into stateroom, galley and engine room; fuel tank located at stern; planking, yellow pine; interior finish in mahogany; exterior trim in oak.

A liberal reward will be paid

to the person or persons furnishing information that will lead to the recovery of the boat above described, which was stolen from her mooring in Wading River, on or about Sept. 21st, 1915. If you see a boat which you think is D A R A F, wire full particulars to C. F. Chapman, Norwich, Conn.

MoToR BoatinG's Bureau for Recovering Stolen Boats

Absolutely Free to Subscribers

The above is an example of the service which MoToR BoatinG is to render to its subscribers absolutely free of charge. New subscribers, as well as those on our books at present may take advantage of this remarkable offer. There is no restriction as to size, power, speed or any other specification of the boat.

You simply send us at your convenience a photograph of your boat with full particulars of same on the blank below. This will be filed in our office and should your boat be stolen, or be lost any time, all you will have to do is to wire or write us of the facts and in the next issue of MoToR BoatinG we will publish an illustration of your boat with detailed description of same. If you instruct us to offer a reward for its recovery, we will do so. Your ad will be read by thousands of motor boatmen, on every harbor, river and bay in this country—the very men who will recognize your boat should they see it. The chances are 100 to 1 that your boat will be quickly recovered and returned to you. Not even a letter of thanks to MoToR BoatinG will be necessary.

If you care to take advantage of this offer, fill in the blank below and return it to us with the very best photograph you have. The information will be regarded as strictly confidential.

If you are not a subscriber, send us \$1 for a full year's subscription for Motor Boating, the National Magazine of Motor Boating, and you will be entitled to take advantage of MoToR BoatinG's Bureau for Recovering Stolen Boats.

Owner	Address
Name of Boat	Type
Length	Beam
Make of Motor	Horsepower
No. of Cyl. . . ; Cycle . . .	Bore Stroke . . .
Planking Material	
Remarks	

Address all communications to

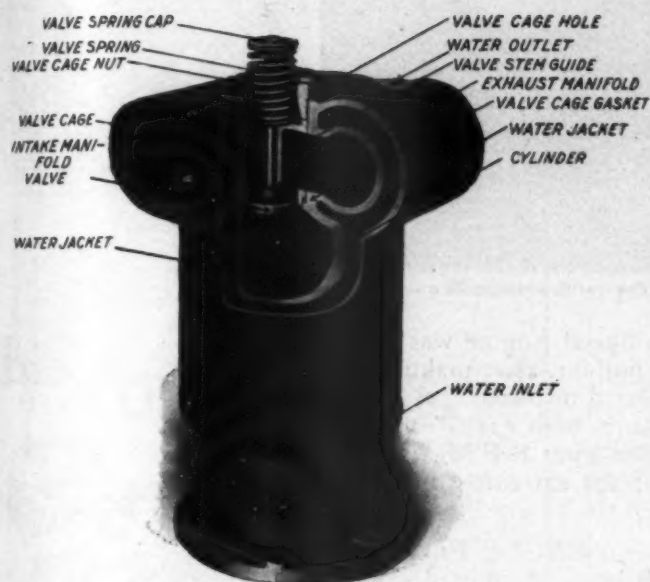
Editor of MoToR BoatinG, 119 West 40th Street, New York

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Frisbie

VALVE-IN-HEAD
MOTOR

The Motor with the Punch - and Why



THERE is a good reason for calling the Frisbie "the motor with the punch," because it delivers 15% to 20% more power for its bore and stroke than other high-grade marine engines. This, in view of the present *high price of gasoline*, is worthy of consideration. The whole secret lies in the perfect valve-in-head Frisbie construction shown by the sectional cylinder cut at the left.

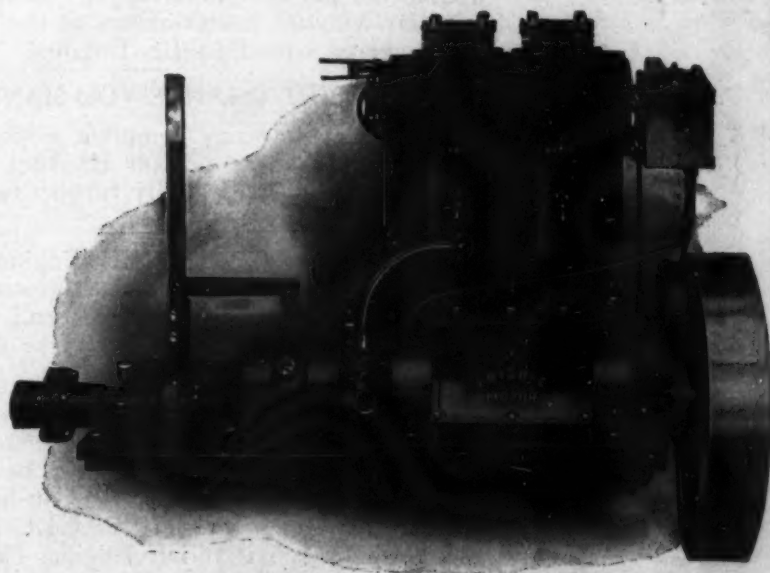
The explosion dome of the cylinder has no pockets or recesses. All the energy is exerted directly on the piston head. The gases get into and out of the cylinder more quickly. Gas passages are cast integral with the cylinder. The large valves are mounted in easily removable cages and surrounded with the cooling water.

In addition to the excellence of design, the Frisbie is an exceedingly well-built motor. It is clean, quiet, compact and smooth-running enough for the finest pleasure boats—and powerful, sturdy, economical and durable enough for heavy commercial service.

Built with one, two, three, four and six cylinders, from 3 to 75 H.P. All valve-in-head four-cycle medium speed type. Gasoline or Kerosene.

Write today for the latest illustrated Frisbie catalog. You will find it both interesting and instructive. Sent free on request.

Attractive Proposition for Dealers.



THE FRISBIE MOTOR CO., Inc., 7 COLLEGE STREET, MIDDLETOWN, CONN.

Export Department, 95 William Street, New York



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Build A "Flying Eagle" Yourself



The Fastest Boat for its size and power in the world, making 22 miles per hour

THE Model 2-o EAGLE High Speed Engine was selected for this boat by the designer and builder, after making tests with several other engines of similar dimensions. A speed of 22 miles per hour for a 16 ft. hydroplane, with a $4\frac{1}{2}$ " x 4" Engine, turning a 14 x 22 x 3 Hyde Propeller 1300 R.P.M., is truly wonderful, and is conclusive evidence of the extremely high efficiency of the power plant.

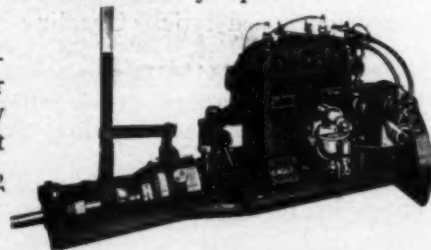
The combination of the Model 2-o EAGLE Engine, and Mr. Apel's boat is one hard to beat with boats of other designs having double the power. This fact has been recognized by all who are familiar with the performances of the boats built from this design and powered with EAGLE Engines.

HERE IS THE CHANCE YOU HAVE BEEN WAITING FOR.

You can now buy complete working plans of the FLYING EAGLE from Mr. Adolph E. Apel, Ventnor Heights, Atlantic City, N. J., who will gladly furnish further particulars and prices on application.

The Model 2-o EAGLE Engine, to which the FLYING EAGLE owes half its success, is illustrated and fully described in our big catalog, which we will send for the asking. Our large stock of Engines enables us to make deliveries immediately upon receipt of all orders.

Now is the time to get started if you expect to build a boat in your spare time after regular working hours so that it will be ready for launching in the Spring. If you haven't ordered a set of FLYING EAGLE plans, and a Model 2-o EAGLE Engine, DO IT NOW.



THE STANDARD CO., TORRINGTON, CONNECTICUT

STEWART CARBURETOR

No Springs,
Cams, Jets,
Reeds or
Complicated
Mechanism

THE country's foremost marine engine builders have adopted the Stewart as standard equipment:

This is the strongest endorsement that can possibly be shown any carburetor.

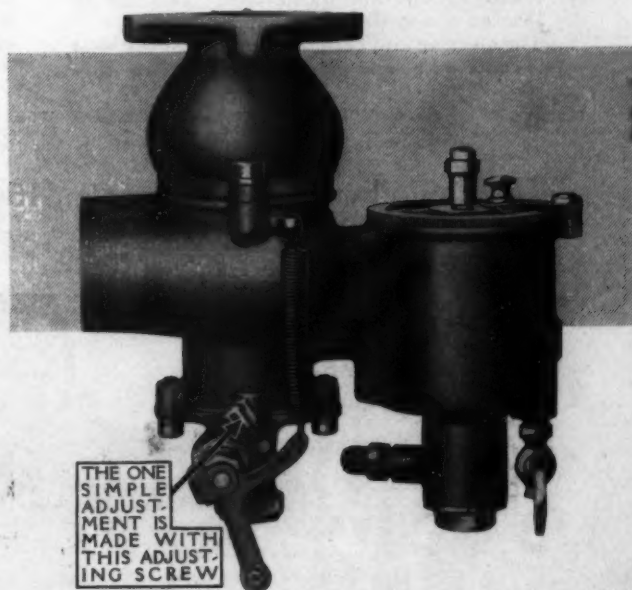
Because of the simplicity of the Stewart Carburetor it has power and is proving economical, serviceable and durable.

Motor boat owners, in all parts of the country, show their appreciation of the Stewart Carburetor by specifying the Stewart in ordering new motors.

There is but one moving part to the Stewart Carburetor—the Automatic Metering Valve.

Let us send you our new catalog No. A-16 that illustrates and tells the complete story of the Stewart.

It is an interesting story and should be in the possession of every boat owner.



THE ONE
SIMPLE
ADJUST-
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MADE WITH
THIS ADJUST-
ING SCREW

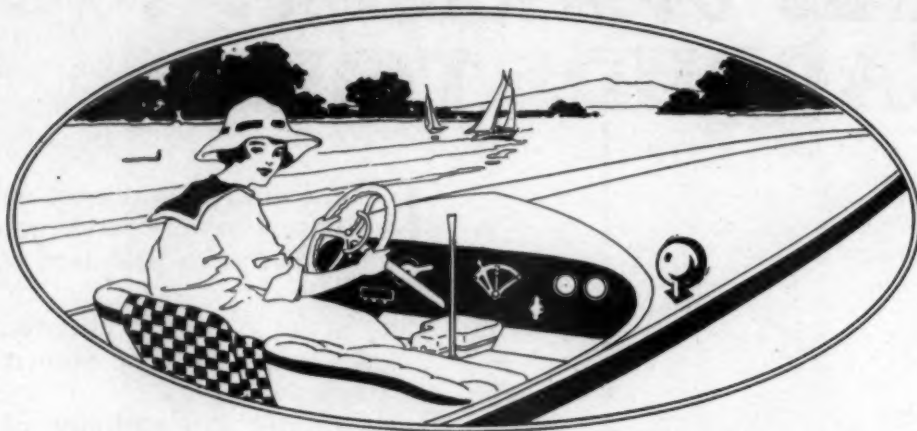
DETROIT LUBRICATOR COMPANY
DETROIT, U. S. A.

Exclusive Distributors: Continental Oil Co., Chicago, Ill.



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Advertising Index will be found on page 45.

The Caille Aristocrat Marine Motor



Controlled Like a Motor Car

IN the design of this motor we had but one object in mind—the production of a perfect marine power plant. And when we say perfect, we not only mean thorough reliability under all conditions, but a motor right up-to-the-minute in refinements as well.

The Caille Aristocrat is a four-cycle motor. It has four cylinders cast en bloc, like an automobile motor. It develops full 14 horsepower.

It is electrically started and controlled. Simply pressing a button starts it. Pressing another button stops it. The motor also provides electric current for lighting the boat. It has bulkhead control. The switches and controlling instruments are mounted on a mahogany finished dashboard. This can be located at any desired point in the boat. The steering and complete control of the boat is centered at one place. The operator does

not have to leave his seat to start, stop, reverse, or secure any of the functions of the motor.

The reversing gear is built into the motor. This insures perfect alignment of shaft and case in gear shifting.

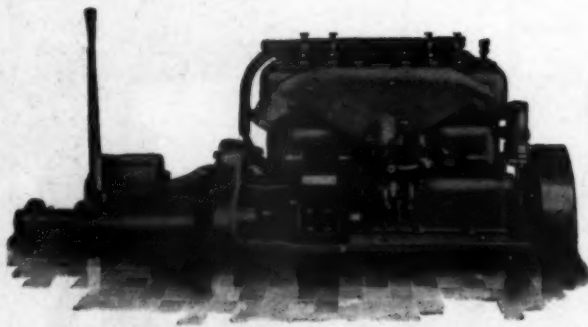
The Caille Aristocrat embodies nothing but the best in materials and equipment. Has Bosch high-tension magneto and Schebler model "R" carburetor.

It is finished in a French gray enamel with nickel trimmings and forms a real ornament for any boat.

Special Catalog No. 48 Mailed on Request—When writing, please tell us the length, beam, draft, speed and style of your boat. This will enable us to write you more intelligently regarding the fitness and advantages of this motor for your particular boat. Dealers Wanted.

The Caille Perfection Motor Co., 1540 Caille St., Detroit, Michigan

**14 Horsepower
4 Cycle
4 Cylinder**



**Electrically
Started
and Lighted**

CAILLE

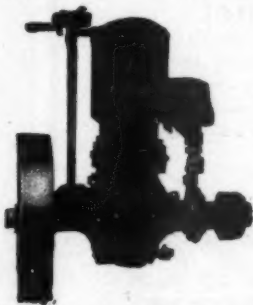
Perfection Motors

Used Wherever the Sun Rises In Launches of All Sizes

The universal popularity of Caille Perfection Motors is based purely on service. This service is of two kinds—direct and indirect. Direct service in helping our customers with their power problems—in working with them hand in hand and advising them unbiassedly and honorably in the selection of the proper motor for their particular boat. The indirect service comes through the medium of the motor itself. It embodies the years of satisfactory, reliable, dependable

power which every Caille Perfection Motor is destined to deliver.

For into each Caille motor is built years of experience. Their design is right, and proven so thousands of times. Materials are of highest grade. The workmanship cannot be improved upon. In operation they represent the height of simplicity. We show a few very popular models. Other types and sizes are fully covered by our special 1916 catalog No. 24.

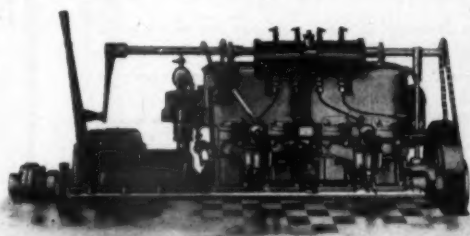
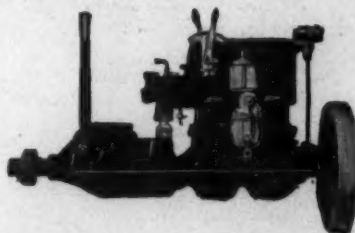


Caille 2-H.P. Single-Cylinder Motor

This is intended for rowboats, tenders and launches up to 18 feet in length. It is a good, reliable, high-grade motor, so simple in design and operation that practically any member of the family can operate it with perfect ease and safety. Thousands are in use all over the world.

Caille 8-H.P. Two-Cylinder Unit Power Plant

This is, without a shadow of doubt, the most popular marine motor ever built. It is designed for pleasure boats ranging from 16 to 30 feet in length. Has reversing gear mounted on same bed as engine, insuring perfect alignment of shaft, reducing friction and facilitating the shifting of reversing gears. It's the ideal motor for the average family launch and runabout.



Caille 18-H.P. Four-Cylinder American Gentleman Motor

An ideal motor for pleasure and speed boats up to 35 feet long. Has rear starter so designed that cranking handle can extend through bulkhead, enabling operator to start motor without touching it or even removing its covering. Reversing gear is mounted on same base as engine. A high-grade, thoroughly efficient and reliable motor.

Send for Catalog No. 24—Tell Us [About the Boat to Be Powered

Our catalog shows the complete Caille line from 2 to 30 H.P. One of these motors will no doubt meet your requirements exactly. If you will tell us the length, beam, draft, speed desired, and the purpose of your boat, we will recommend the motor best suited to your needs. If your boat demands a different motor than we build, we'll tell you so and give you our advice.

**All Caille Two-Cycle Inboard Motors Can Be Furnished with
Kerosene Feeders Enabling the Use of Kerosene or Gasoline.**

THE CAILLE PERFECTION MOTOR CO.
1540 CAILLE STREET, DETROIT, MICH.



The Sailor Instinct

is keeping everything trim and smart about the ship. Hundreds upon hundreds of motor boat owners are Kyanizing their little craft and big craft too. Because there's nothing like Kyanize for the hard wear of water, sun and wind upon the motor boat.

Kyanize

KY-AN-IZE

RENEWES AND PRESERVES. A KYANIZED BOAT IS ALWAYS A NEW BOAT

Kyanize Waterproof Spar Finish will not crack, soften or check. Use it on the deck, on the fittings, on all the varnish woodwork. It will not turn blue or white either in or out of salt or fresh water.

Stands any climatic condition. Sun, rain, heat, cold. Thousands of gallons used in the United States Navy. There's no better varnish.

Kyanize White Enamel is different from the white paint you've been using. Kyanize White Enamel will wear longer, look better, is whiter and will add more speed to your boat.

This is the Enamel used on the high-grade boats. Best for all white work on wood or metal. Leaves a durable, high gloss finish, easily cleaned. It will not crack, chip or peel.

And we refund the money for the empty can if it does not do all we claim.

If there is no Kyanize Agent in your town don't take something "just as good". Write us direct.

Boston Varnish Company
EVERETT STATION, BOSTON, U. S. A.

Chicago
Warehouse and Office
519 West Twelfth St

San Francisco
Warehouse and Office
311 California St.



Doubles the Pleasure of Motor Boating

The height of motor boating enjoyment is attained when you can control your boat perfectly—stop, reverse, or go ahead instantly, as desired. This is only possible when your boat is equipped with a reliable, quick-working reverse gear.

Besides enabling you to control your boat like an automobile, a first class reverse gear is the best safeguard against accidents and collisions. If you are caught in close quarters, a shift of the lever will quickly bring you out of danger.

Without question, motor boating is doubly enjoyable and far safer if your power plant is equipped with a high grade, dependable gear like the

Baldrige Reverse Gear

This gear has proved its reliability and efficiency through years of actual service. It is used by thousands of motor boatmen and by leading engine builders all over the world.

One of its big outstanding features is the main shaft, which extends unbroken from bearing to bearing. It cannot possibly sag or wobble, and perfect alignment is permanently assured.

Its clutch and reverse band are so designed that it "idles" perfectly, takes hold and releases quickly and positively.

It carries overloads far greater than its rated capacity would indicate.

Since the gears are completely enclosed, the lubricant cannot leak out, nor can water leak in to rust them.

The Baldrige gear has more than double the support usually found in reverse gears. It has double expansion clutches with reinforced reverse bands—gears heat treated and hardened by modern scientific methods—automatic lubrication and a housing covering every moving part.

"The
gear
with
the
unbroken
main
shaft"

Enjoy motor boating to the fullest extent and be prepared for every emergency by equipping your plant with the Baldrige Reverse Gear.

Our Baldrige Book explains reverse gears and reverse gear construction fully, and gives information that will interest every motor boat owner. This book is sent free on request. Write for it today.

THE BALDRIDGE GEAR CO., 238 Mt. Elliott Ave., Detroit, Mich.

Export Office
47 Broadway
New York City, U. S. A.



The Baldrige Reverse Gear is standard equipment on a large number of the leading American and European marine engines. When you select an engine, ask about the Baldrige. If it is not regularly furnished with the engine you buy, ask to have it included. You can have it, if you insist.

When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating. Advertising Index will be found on page 45.

COLUMBIAN



THE RIGHT WHEEL FOR ANY TYPE OF BOAT

THE UNITED STATES GOVERNMENT

always specifies the amount of blade surface on every propeller ordered, proving that no one type of propeller will fit all types of boats.

COLUMBIAN PROPELLERS are the only ones that combine the right blade surface, diameter and pitch with greatest efficiency, accuracy as to pitch, balance, workmanship and material.

The superiority of

COLUMBIAN MANGANESE BRONZE

is conclusively proven by the following recent tests:

	Test No. 0.	Test No. 1.	Test No. 9.	Test No. 21.
Breaking strength per square inch.....	76,000 lbs.	74,500 lbs.	69,900 lbs.	71,750 lbs.
Elastic Limit per square inch.....	38,000 lbs.	36,000 lbs.	35,500 lbs.	36,750 lbs.
(Pull required to start stretching.)				
Elongation in two inches.....	30%	26%	39%	37%
(Amount of stretch before breaking.)				

(Tests made by Dr. Chas. F. McKenna Laboratory, 50 Church St., N. Y. C.)

The United States Government requires:—Breaking Strength, 65,000 lbs.; Elastic Limit, 30,000 lbs.; Elongation, 20%.

THAT IS WHY COLUMBIAN PROPELLERS ARE NOW USED BY THE UNITED STATES AND OTHER GOVERNMENTS, BY THE MOST UP-TO-DATE ENGINE MFRS. AND BY THE FASTEST BOATS THAT FLOAT.

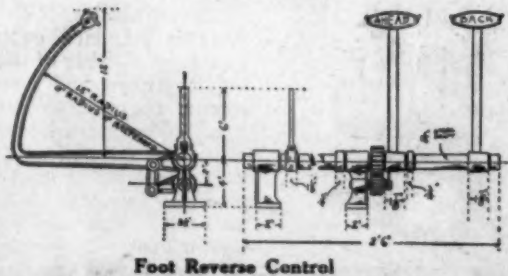
A most interesting propeller treatise, "Propellers in a Nut Shell," will be sent free upon request. Have you received your copy?

**COLUMBIAN BRASS FOUNDRY, 218 North Main Street
FREEPORT, NEW YORK**

Call on us at the New York Motor Boat Show

New York Branch for Local City Sales only: Concourse, 50 Church St., New York City

PEERLESS PROPELLERS are made of Composition Bronze to meet the requirements of those using low-priced propellers. They are made from regular Columbian Patterns in "Arrow," "Rocket" and "Reliance" styles, and offer the best value on the market for the price. Castings are guaranteed sound. Ask for Peerless Price List.



Foot Reverse Control

COLUMBIAN FOOT REVERSE CONTROL.
Operate your reverse gear with your foot.

**COLUMBIAN UNIVERSAL STRUTS ARE
THE BEST**
at prices no higher.

RUDDERS OF ALL TYPES.
50 different patterns.
We have something special for your boat.



UNIVERSAL
STRUT.
SELF ALIGNING.

10 NEW FEATURES

in the 1916

Waterman Porto

THE Waterman Porto for 1916 embodies many new features that will appeal strongly to outboard motor purchasers who are looking for maximum results in the way of power, flexibility and greatest possible all-around convenience.

For ten years the Waterman Porto has led the field in outboard motor construction and every new and practical feature that makes for better satisfaction has been quickly adopted.

This year, however, sees a greater number of improvements than ever before, and every possible precaution has been taken to keep the Waterman Porto the first outboard motor in the world in the way of flexibility, accessibility and easy handling qualities. At the same time features that make for long life and the best possible service have also been incorporated in the Waterman design.

Unlimited Speed Control

One of the most important features in the Waterman Porto for 1916 is the new type reversible propeller, which gives unlimited control of the speeds and makes the engine one which might be called "the outboard motor with a thousand speeds." In fact, the Waterman Porto has the perfect speed control of an automobile. Simply shift the level to get any speed desired, forward or reverse, and set the lever in position with a friction clamp—no fixed notches or quadrants. You can stop your boat in half its length—dock without stopping your engine—troll at any speed desired with any type or size of boat.

New Type Flywheel Magneto

The flywheel magneto used in the 1916 Waterman Porto is absolutely new and different from any other magneto used, either in outboard motor construction or other work. Its efficiency is guaranteed. It will give a hotter, fatter spark at slower speeds than any magneto that we know of. This is due to the fact that we use one large single magnet instead of two small magnets. This is one of the many interesting and important features described in detail in our new catalog.

Automobile Type Carburetor

Instead of using the ordinary cheap mixing valve, the Waterman Porto is equipped with a very efficient and economical carburetor, which gives decidedly better control and at the same time more power and more speed.

Send for This Book Today

It will be to your interest to get the latest copy of the Waterman Porto catalog, which describes in detail the various new features incorporated in the 1916 design, such as more liberal bearing surface, double capacity fuel tank, newly designed pump, etc. In fact, you will find the Waterman catalog a mine of interesting and valuable information about outboard motor construction. It gives in detail the essentials that you should demand in order to get full value for your money.

The Waterman Motor Company

201 Mt. Elliott Ave.
DETROIT, MICH.

A Few Words About the Original Outboard MOTOR



"A majority of the readers of Motor Boating undoubtedly know that the Waterman Porto was the first outboard motor on the market. In our new 1916 catalog, which is just off the press, I have given a brief history of the Porto motor, together with how the idea of building such a motor occurred to me, and incidentally showing an actual photograph of the very first outboard motor to be put on the market, following several years of experimental work.

"This brief story of the Waterman Porto will give you an idea of the difficulties first encountered in this field, and at the same time will show you the measures we have adopted to keep the Waterman Porto in the lead. If you are interested in this brief history of the first portable motor ever built, a copy of the new 1916 catalog, illustrated herewith, will be sent free on request."

C. B. WATERMAN.



"SANDS" MARINE SANITARY FIXTURES

USED ALL OVER THE WORLD

**OUR
RECOMMENDATION**
Prompt Service

SERVING THE PUBLIC SIXTY-SEVEN YEARS WITH A RECORD
OF FIFTY-TWO YEARS FOR A PUMP CLOSET IN
CONSTANT USE AND STILL IN SERVICE

Prices Reasonable

**QUALITY
MAINTAINED**
Satisfaction Guaranteed



The "Frisco"—Plate S-2046

(Design Patented—Copyrighted)
The "FRISCO" PUMP WATER CLOSET, extra heavy Vitro-Adamant Oval Hopper Bowl, THREE (3) INCH combined supply and waste pump. All metal parts smoothed. Detachable N. P. metal handle with wood grip.

Plate S-2045 Polished oak seat, no cover, \$59.00

Plate S-2046 Polished oak seat, with cover, 60.00

Dimensions: Width 34", front to back 21", height 17 1/2". Weight: Net 80 lbs. Shipping 120 lbs.



Plate S-2062

The "Angle" Composition flanged Sea Valves, with straight couplings and locking plate, for use on the supply and discharge of small pump circuits.

Price, per pair with strainer for supply...\$6.00



The "Winner"—Plate S-2061. (Copyrighted)

The "WINNER" Pump Water Closet for use above or below the water line. Vitro-Adamant flushing rim hopper bowl. Oak seat with nickel plated brass post hinges. 2 1/2-inch Combination Supply and Discharge Pump. "Sands Special" quick opening supply valve and "Sands" patent back water check valve.

Plate S-2060. The "WINNER" Closet as described \$19.00

Plate S-2061. The "WINNER" Closet as specified 20.00

Dimensions: 20" front to back, 25" wide, 18" high. WEIGHT: 35 lbs. NET, 60 lbs. SHIPPING.



Plate S-126

The "Glenora" Composition Bat wing sea cock for use on supply and discharge of closets.

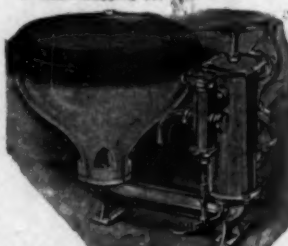
1/4 inch \$2.25
1/2 " 3.00
3/4 " 4.00
1 " 5.00
1 1/2 " 6.00
2 " 8.00
Sizes 2 1/2" and 3" also made.



"Florida"—Plate S-2018

(Patented—Copyrighted)
The "FLORIDA" PUMP WATER CLOSET with extra heavy oval Vitro-Adamant Bowl. FOUR (4) INCH combined supply and waste pump with check valve in waste arm. COMPLETE WITH OAK SEAT AND COVER PUMP ROUGH WITH FINISHED TRIMMINGS \$100.00

WITH MAHOGANY SEAT AND COVER PUMP WHITE ENAMELED \$112.50
WITH N. P. TRIMMINGS \$112.50
DIMENSIONS: 21" front to back, 25" wide, 21" high. WEIGHT: 80 lbs. Net, 135 lbs. Shipping.



"Knockabout"—Plate S-34

(Patented—Copyrighted)
The "KNOCKABOUT" Improved Pump Water Closet, vitro-Adamant round flushing rim bowl, 2 1/2-inch combined supply and waste pump, "Sands" patent automatic safety supply foot valve, and "Sands" patent back-water check valve.

Pump rough, finished trimmings, oak seat and cover, Mahogany seat and cover, add 1.50

Weight: Net, 48 lbs.; gross, 75 lbs. Dimensions: Front to back 19", width 17 1/2"; height, 14".



Plate S-709

All Brass Galley Pump, 1 1/2 in. Cylinder, reversible handle with shut-off cock. Polished \$5.50
N. P. all over \$8.50



"Sands" New "Voluum" Bilge Pump is 25" long with 2" cylinder, fitted with 5" rubber hose. Capacity 1 gallon every 4 strokes.

Plate S-4300 As described \$4.50

Plate S-4301 Same as above, but also fitted with adjustable foot rest...\$5.00



Plate S-150

The "Glenwood" Folding Lavatory, with Vitro-Adamant oval basin, N. P. copper lining, N. P. brass double-acting pump, N. P. brass trimmings.

Quartered oak, polished finish...\$42.50

Mahogany, polished finish...44.00

Plate S-152

"Croton" Folding Lavatory, same as Plate S-150, except with faucet for pressure or gravity supply.

Quartered oak, polished finish...\$37.50

Mahogany, polished finish...39.00

"Safety First" Use Sands Fixtures

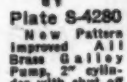


Plate S-4280

New Pattern Improved All Brass Galley Pump, 2" cylinder with shut off cock. Pol. Brass \$12.00
N. P. all over \$14.00



"Bow" Closet Plate S-2050

(Design Patent Applied For)
The "Bow" Closet, vitro-Adamant bowl, 2 1/2" pump, located at rear, fitted with wing handle. Gold opening supply valve. Space supplied, 18x24".

Pump rough, with finished trimmings, oak seat, N. P. \$30.00

Dimensions: Front to back 20 in., width 14 in., height 12 in. Net weight, 35 lbs. Shipping, 70 lbs.



Plate S-3183

The "Manatee 14" Vitro-Adamant Flat Back Lavatory, with N. P. Brass Pump and waste fittings; no trap \$22.75

Plate S-3180

The "Manatee" Lavatory, same as Plate S-3183, except with faucet instead of pump and with N. P. Full "S" Trap \$13.25



Plate S-750

Double Acting Brass Gate Bilge Pump, 15 inches long under spout and fitted with 5 feet of rubber hose.

No. 1—1 1/2" diam...\$2.00

No. 2—1 1/2" diam...4.50

No. 3—1 1/2" diam...24" long, with foot rest...8.50



Plate S-1002

Round Composition Air Parts, with heavy frame and hinge.

Diam. of Opening Plain \$16.75

9" 12.00 12" 26.50 14" 28.50

Plate S-5202

Universal Polished Brass Rope Lead.

Swing joint permits different angles of Pulley—prevents binding of rope.

Polished Brass \$.33



Plate S-5210

"Sands" Polished Bronze Fender Hooks, with screws for 1-4 in. rope. Price per doz. \$2.50



Plate S-5200

Neptune Motor Boat Bow Lantern Bracket; hinges permit bracket to lie on deck when not in use.

Polished Brass \$0.75



Plate 130 3/4-B

Cast Brass Round Raised Strainer.

2 1/2" \$0.35

3" .40

4" .50

5" .60

6" .75

8" 1.00

10" 1.25

12" 1.50

14" 2.00

16" 2.50

18" 3.00

20" 3.50

22" 4.00

24" 4.50

26" 5.00

28" 5.50

30" 6.00

32" 6.50

34" 7.00

36" 7.50

38" 8.00

40" 8.50

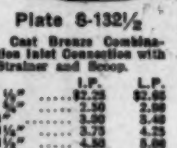


Plate S-132 1/2

Cast Bronze Combination Inlet Connection with Strainer and Stopcock.

L.P. \$2.25 L.P. \$2.50

1/4" 2.50 1/2" 2.80

3/4" 3.25 1" 3.50

1 1/4" 4.00 1 1/2" 4.50

1 3/4" 5.00 2" 5.50

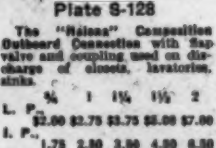


Plate S-128

The "Nileas" Composition Outboard Connection with Sap Valve and Coupling used on discharge of closets, lavatories, sinks.

1/4" \$2.00 1/2" \$2.75 3/4" \$3.75 1" \$5.00 1 1/4" \$7.00 1 1/2" \$7.50 1 3/4" \$8.00 2" \$8.50

L.P. 1.75 2.50 3.50 4.50 6.50

1" 1.75 1 1/4" 2.50 1 1/2" 3.50 1 3/4" 4.50 2" 6.50

2 1/4" 7.50 2 1/2" 8.50 2 3/4" 9.50 3" 10.50

3 1/4" 11.50 3 1/2" 12.50 3 3/4" 13.50 4" 14.50

4 1/4" 15.50 4 1/2" 16.50 4 3/4" 17.50 5" 18.50

5 1/4" 19.50 5 1/2" 20.50 5 3/4" 21.50 6" 22.50

6 1/4" 23.50 6 1/2" 24.50 6 3/4" 25.50 7" 26.50

7 1/4" 27.50 7 1/2" 28.50 7 3/4" 29.50 8" 30.50

8 1/4" 31.50 8 1/2" 32.50 8 3/4" 33.50 9" 34.50

9 1/4" 35.50 9 1/2" 36.50 9 3/4" 37.50 10" 38.50

Complete line of closets, lavatories and specialties described in NEW Catalogue "R" ready in near future, sent free on request.

A. B. SANDS & SON COMPANY

Largest Manufacturers in the World

MARINE PLUMBING SPECIALISTS

1849—"SIXTY-SEVEN YEARS OF QUALITY"—1916

22-24 Vesey St., New York, U. S. A.

When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating. Advertising Index will be found on page 45.



Motor Yacht "Paragon" powered with two 200 H.P. Winton Engines.

Your Satisfaction and Ours

With the majority of yacht owners the ambition to possess a really fine yacht is constant. This necessarily includes a really fine engine. After the design and construction of the boat, the next and very important consideration is the power plant.

There are many makes of engines that will fill the power requirement if it is simply a question of so much power. But the need is beyond mere power. It is that the engine be in harmony with its surroundings. That is, that it be a clean, quiet, smooth running element, the operation of which will be free from noise and vibration.

The design and construction of Winton engines not only provides ample power, but satisfies every other condition of installation, however exacting.

Owners have found that the refinement of "Winton" engines really means increased durability and efficiency. Remarkably low up-keep costs result, which are a source of great satisfaction to owners and to us, the Winton aim being to serve, not to save.

Catalog of sizes and general information will be sent upon request.

Winton Engine Works
Cleveland, Ohio

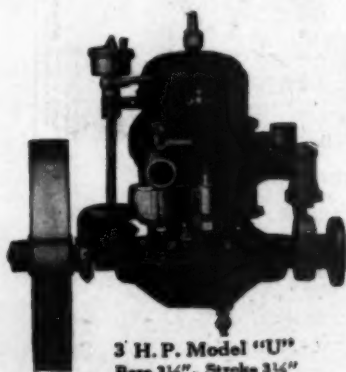
GRAY

Two Cycle

The Complete Line for Dealer, Boat by the World's Largest Builders of

Styles change. Motors come and go. It takes a decidedly live concern to stay at the top for several years running. Fundamentals never change.

Gray Motors have been at the top for so long that it has become a habit. A pioneer in the marine industry and a leader always, the Gray has been a big seller for years and today it is as popular as ever. Nineteen sixteen will be another big Gray season.

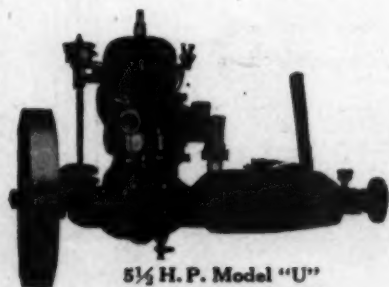


3 H. P. Model "U"
Bore 3 1/4", Stroke 3 1/4"

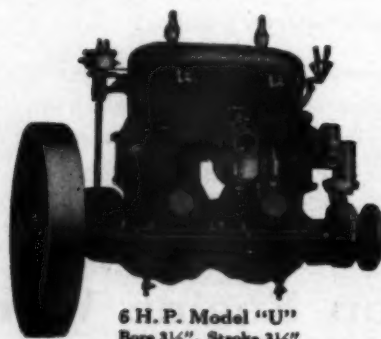
Gray Two Cycle Motors are recognized the world over as the standard two cycle marine motors. The demand for the Gray Two Cycle is so great that we shall continue to build a complete line. Thousands are in use, installed and recommended by hundreds of leading boat builders in the United States and Canada. For a light, compact, inexpensive engine, this type will never be equaled—when it is built the Gray way.

The Gray Model "U" is in a class by itself—remarkable for its power, speed, endurance, economy, reliability, simplicity, and its smooth running and easy starting. If you want the maximum amount of service for your motor investment don't fail to study up the advantages of the Gray Model "U."

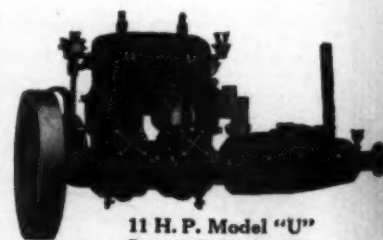
Write today for catalog. Ask also for our "Boat Builders' Catalog." It tells where you can buy the kind of a boat you want, at the price you want to pay. It gives the name and address of the leading boat builders in your locality. The catalog and Boat Builders' book are free on request.



5 1/2 H. P. Model "U"
Bore 4 1/4", Stroke 4 1/4"



6 H. P. Model "U"
Bore 3 1/4", Stroke 3 1/4"



11 H. P. Model "U"
Bore 4 1/4", Stroke 4 1/4"

GRAY MOTOR CO.,

374 GRAY MOTOR BLDG
DETROIT, MICH., U. S. A

GRAY

Four Cycle

Boat Builder, and Motor Boatman—Built of 2 and 4 Cycle Marine Engines

"D-Jr." The Four-Cycle Hit of the New York Show

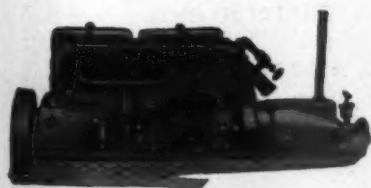
A year ago our Model "D" was the sensation of the New York Show. Imagine our gratification this year when our new "D-Jr.", a smaller edition of the popular Model "D" again scored a big hit at the show.

A year of service for the Model "D" proved it a wonder in quietness, cleanliness, smoothness and convenience. Immediately the requests began to reach us for a smaller four-cycle of equal quality. The "D-Jr." is the result.

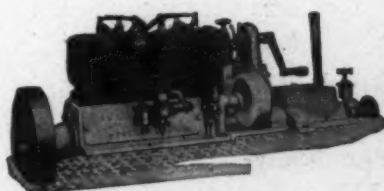
The new motor is strictly a marine motor, manufactured for marine purposes—not the "left-over" product of some defunct automobile or cycle car concern. We have used unlimited care in developing the design. Of course, it is easy enough to build a good small motor, compact, powerful and durable, but to produce such a motor at the price we have set for the "D-Jr." is an achievement even for manufacturers with our great experience and wonderful facilities. We are proud of it.

The motor is one we are ready to stake our good name on. The price is the lowest ever established by a responsible marine motor manufacturer on a 4-cycle engine of its power and quality. Built with two cylinders, 5-6 H.P., and four cylinders, 10-12 H.P.

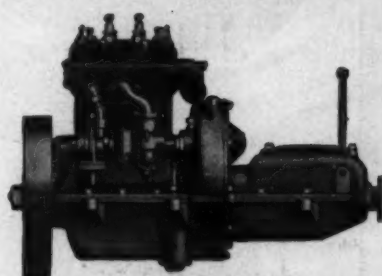
Get the Gray catalogs and Gray prices before you buy. Write for them today.



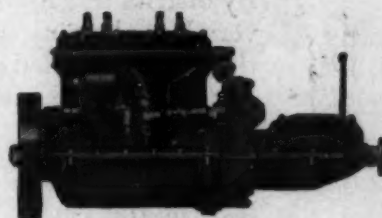
40-50 H. P. Model "C"
Bore 3 1/4", Stroke 5 1/4"



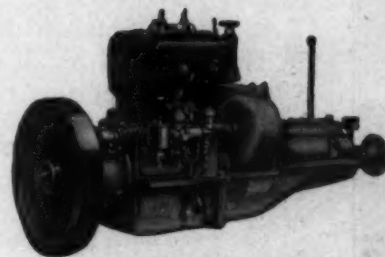
20-24 H. P. Model "D"
Bore 3 1/4", Stroke 4 1/2"



5 to 6 H. P. "D Jr."
Bore 3", Stroke 4"



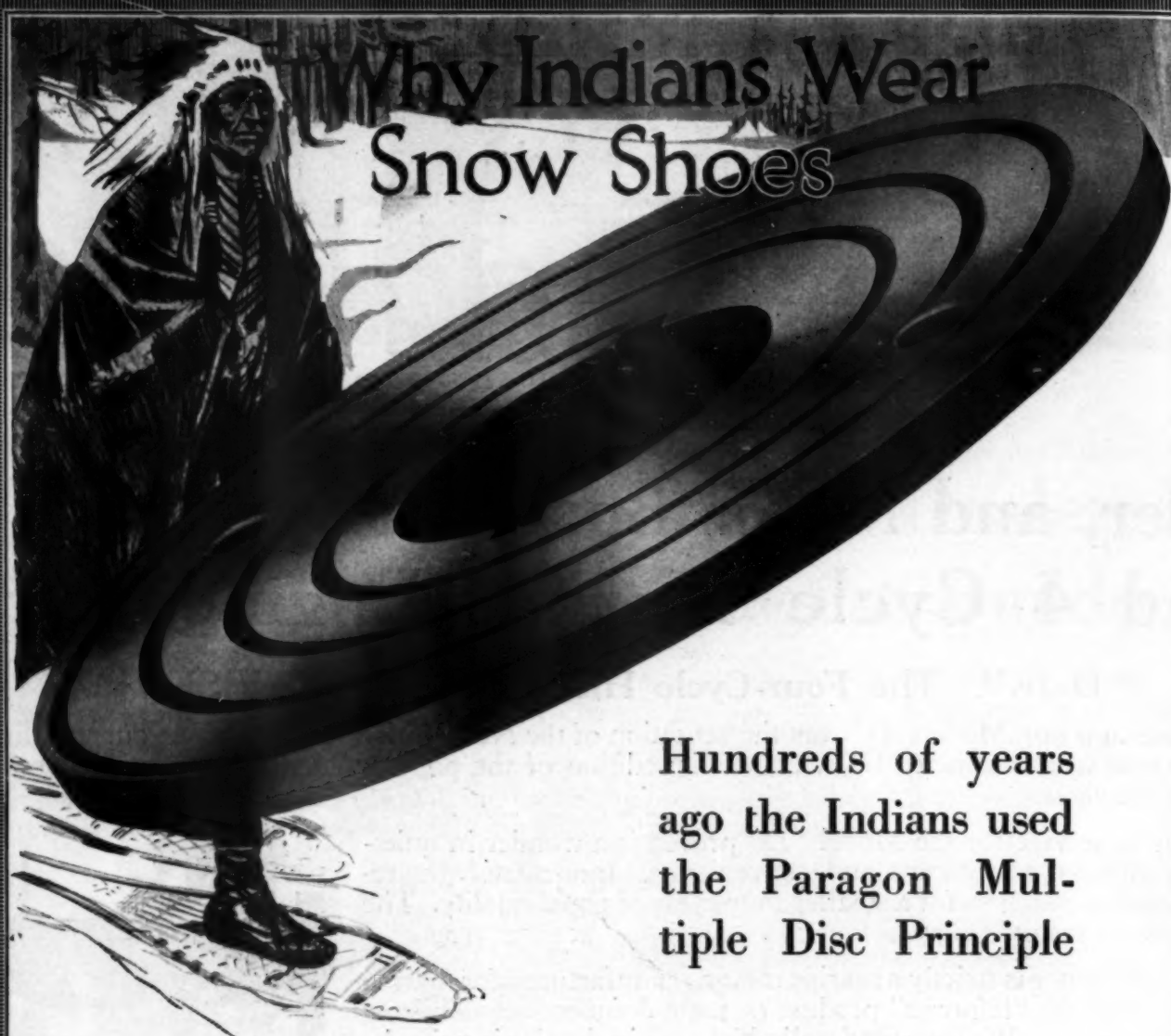
10-12 H. P. "D Jr."
Bore 3", Stroke 4"



10-12 H. P. Model "D"
Bore 3 1/4", Stroke 4 1/2"

GRAY MOTOR CO.,

374 GRAY MOTOR BLDG.
DETROIT, MICH., U. S. A.



Why Indians Wear Snow Shoes

Hundreds of years ago the Indians used the Paragon Multiple Disc Principle

By distributing his weight evenly over the very large bearing surface of a snow shoe, the Indian traveled over drifts that would bury you or me with our ordinary shoes.

In the same way the Paragon Multiple Disc type of Reverse Gear distributes the load of the engine evenly over a great many inches of friction surface.

This is obtained by multiple discs and is recognized by all motor manufacturers as the one perfect type of transmission.

These smoothly ground friction discs have a remarkable holding surface. They enable the lever to be thrown in gradually

with no sudden load on any of the parts. They give the Paragon a factor of safety of 100 per cent.

Special grinding machines give a glass-like surface to its friction plates. Automatic machinery makes parts in large quantities. These parts are inter-changeable.

Paragon parts are accurate. They are ground to size to within 1/1000 of an inch.

Paragon Gears are as near wear-proof as years of skill can make them. When you buy a new motor insist that it be Paragon Geared. Send for illustrated booklet.

PARAGON GEAR WORKS
EVANS STAMPING AND PLATING CO.
Cushman Street - - Taunton, Mass.

1916

9-12 H.P.—ARISTOCRAT

Positively the Latest
in Modern Motor
Design and Construction

Special feature
**Patented Engine
Starter**

Designed to make engine
starting a pleasure

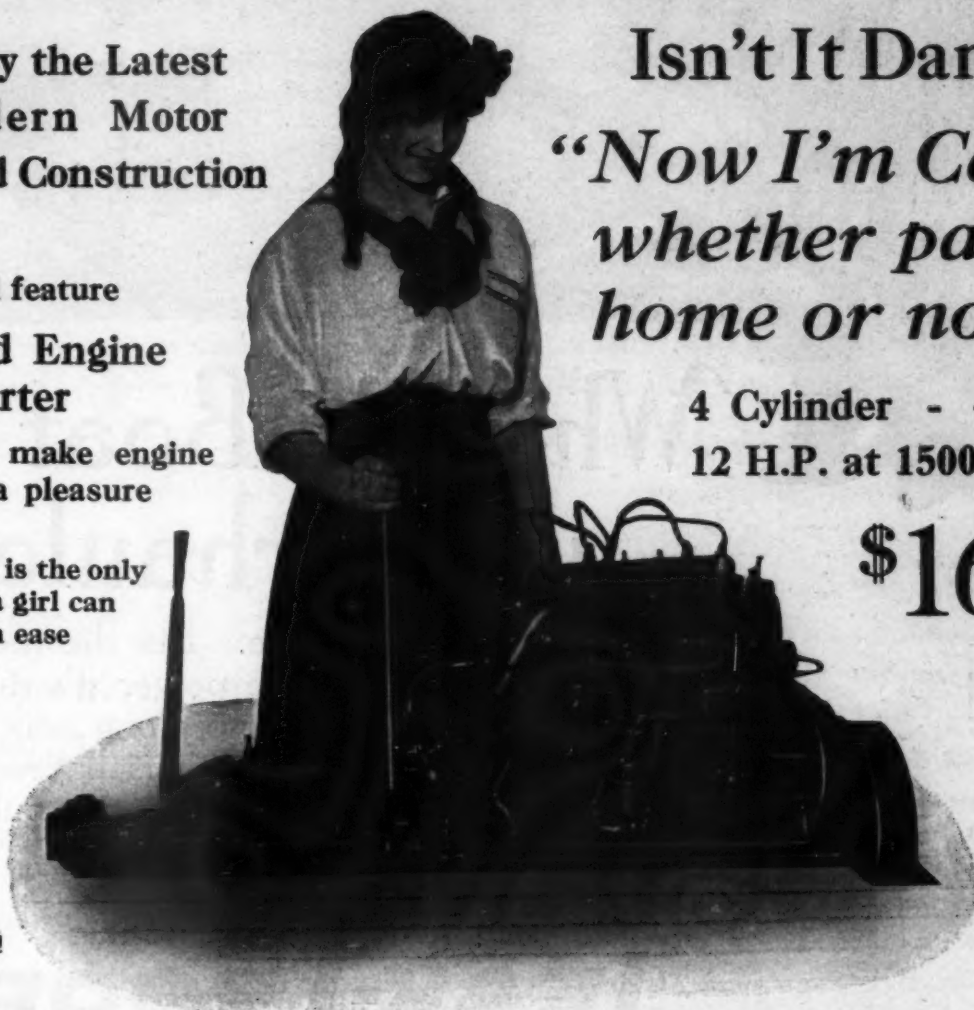
The Aristocrat is the only
engine that a girl can
start with ease

Isn't It Dandy?

*"Now I'm Captain
whether pa's
home or not"*

4 Cylinder - 4 Cycle
12 H.P. at 1500 R.P.M.

\$160.00



22 miles per Hr. in 16-footer 15 miles per Hr. in 23-footer
20 miles per Hr. in 19-footer 10 miles per Hr. in 28-footer

Equipment

Patent starter
Dixie high tension
water-proof mag-
neto.
Kingston carburetor
Lobee water pump
Standard reverse
gear
Sight feed oil gauge
Designed spe-
cially for perfect
balance and freedom
from vibration



20 miles per hr. in 19-footer

Specifications

Number of cylinders, 4
Diameter of cylin-
ders, 2 1/2"
Stroke of pistons, 4"
Diameter of flywheel, 11"
Weight of engine,
290 lbs.
R.P.M., 300-1500
Diameter of propeller
shaft, 3/4"
Standard propeller,
14x14-3 blades
Enclosed valves, all ad-
justable
Water-jacketed exhaust
Taper fit for flywheel
Cylinders cast en bloc
Lubrication, pump and
splash

Good proposition for live agents in uncovered territory

THE HERRMANN ENGINEERING CO.

654 FRANKLIN ST., DETROIT, MICH.



When the Boat is Overhauled

Give it a new lease of life. Put the motor in shape to deliver all the power it's rated to produce. Don't let it go along another season with defective piston rings that waste power, fuel and oil—cause carbon trouble. Put in

McQUAY- **LEAK-PROOF** NORRIS PISTON RINGS

The only durable and efficient gas-tight and oil-tight seal for pistons.

Leak-Proof Piston Rings give perfect compression, save fuel and oil—stop carbon. Their light tension causes less cylinder wear and friction loss.

All good supply houses, repair shops and marine stores have them in stock.

Send for FREE booklet:—"To Have and to Hold Power"—the standard handbook of gas engine compression. It tells what **Leak-Proof** efficiency means. Write Department B.



Manufactured by
McQuay-Norris Mfg. Co., St. Louis, U. S. A.

Canadian Factory: W. H. Banfield & Sons, 372 Pape Avenue, Toronto.

BRANCH OFFICES:

New York
San Francisco
Kansas City

Chicago
Los Angeles
St. Paul

Philadelphia
Cincinnati
Atlanta

Dallas

Pittsburg
Seattle
Denver

JUST A FEW FACTS

The wise manufacturer considers first what he can do for his client rather than what his client can do for him.

For sixteen years the products bearing our name have stood for a high degree of excellence.

For the same period this Company has enjoyed an enviable reputation for absolutely fair dealing with its clients.

Among those who buy of us are some of the most prominent men and women in the country, socially, financially and mechanically.

Being makers of both engines and boats, we are able to study the mechanical problems from every angle.

Our sales at the National Show in New York, closing Feb. 5th, exceeded those at any previous Show, although we have exhibited for eight years, and have always done well.

Our aim always has been to make quality the first consideration.

The reliability and durability of our engines, and the comfort and ele-

gance of our boats, has won for us the good-will of both clients and competitors.

We have kept abreast of all improvements without being led away by fads and freaks in design or model.

We have received many compliments on our success in pleasing clients who were more than usually particular.

We do not believe in making claims which we cannot substantiate, and we are frequently told by purchasers that they are more pleased than we led them to expect.

Our engines are designed for severe and continuous service. Their installation and operation is simple, and their equipment complete and of the best.

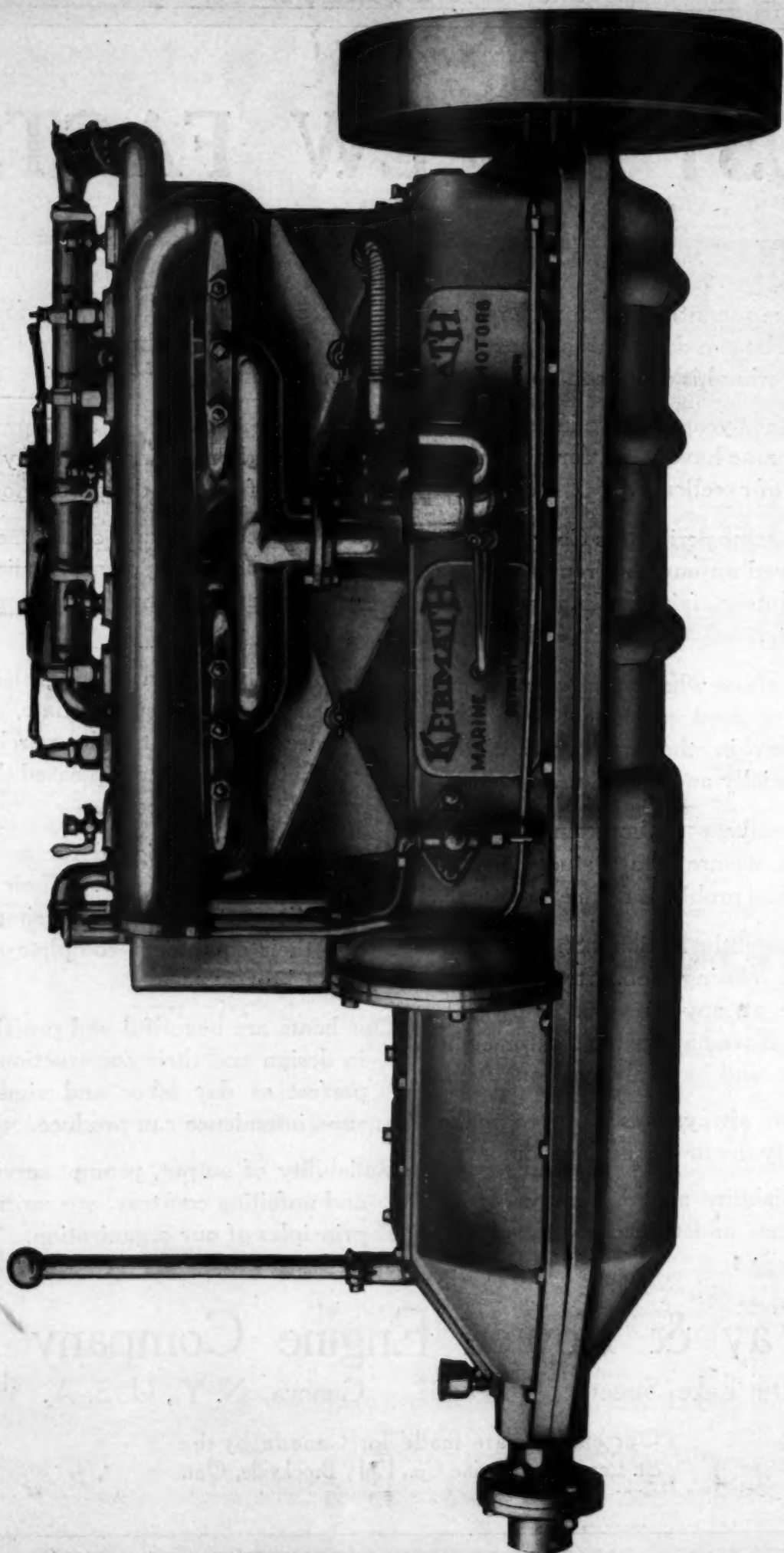
Our boats are beautiful and practical in design and their construction as perfect as day labor and vigilant superintendence can produce.

Reliability of output, prompt service, and unfailing courtesy, are cardinal principles of our organization.

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